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PLEASE RETURN NORTHWEST ENERGY NEWS

Volume 1, No. 1

Northwest Power Planning Council

March, 1982



Dan Evans on the NW's Energy Future

The press called him the Straight Arrow. For 12 years, during some of the nation's and the region's most turbulent times, Daniel J. Evans served as governor of Washington. Elected in 1964 after defeating the incumbent, Evans became a central force in a number of landmark measures protecting the environment, reorganizing state government and providing social services. Re-elected to three consecutive terms, he gained wide respect in the state and the nation. In fact, Evans was recently named one of the 10 best governors to serve during the 20th Century. In 1976, in an unusual move for an elected official, Evans announced that he would not seek re-election and retired from political office to spend more time with his wife, Nancy, and their three chil-

dren. In 1977, he was selected president of The Evergreen State College in Olympia, Washington. After Congress passed the Pacific Northwest Power Planning and Conservation Act there was much speculation about who would be appointed to the newly established Council. In Washington, one name came up: Dan Evans. Indeed, Washington Governor John Spellman did appoint his predecessor, and at the Council's initial meeting last April Evans was unanimously named the first chairman of the Northwest Power Planning Council. The following is an interview with Evans on his reflections on the region's past and his outlook on the region's energy future.

Q. First let's talk about why you decided to get back into the fray of public office.

A. Well, it's just a different kind of fray, of course. Higher education, I thought, was a retreat from politics, but public

higher education isn't much of a retreat. When the Power Act passed, I got more and more interested in what was about to take place and the potential it had for resolving what was rapidly becoming a major impediment to the growth and well

being of the Pacific Northwest: the adequacy of electric power.

The prime reason for saying yes is really two-fold. One is the question of electric power and the need for state involvement.

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What is the Northwest Power Planning Council?

It has come to be known simply as "The Council."

Its task, however, is anything but simple: to prepare and to enact a plan for the Northwest's electric energy future to the Year 2000. Eight people — two each from Washington, Oregon, Idaho and Montana — must, by April, 1983, chart a new path for the Bonneville Power Administration. It is a job that will affect the people and commerce of this region well into the next century.

The Council — officially, the Northwest Power Planning Council — came into being as a result of congressional passage of the 1980 Regional Power Act and legislation passed by each of the four Northwest states appointing its first members.

The Council has two primary purposes. First, to develop a comprehensive regional electric energy plan. Second, to develop a program for the enhancement of fish and wildlife in the Columbia River System. The Council must actively involve the public in both of these tasks. And all this must be accomplished by April, 1983, only two years after the Council was formed.

The regional plan must be built around a framework laid out in the law passed by Congress (Public Law 96-501). The law requires the Council and B.P.A. to give top priority to development of cost-effective conservation throughout the region. Thus, for the first time in federal legislation, conservation is treated as a power resource the same as building a power plant. After conservation, the next priority is renewable resources, followed by co-generation, and finally, conventional coal or nuclear plants. In developing the plan,



The Council in action: Chuck Collins makes a point, as fellow Council member Gerald Mueller looks on.

the Council will pay most attention to the resources that are least expensive — ensuring the Northwest of having an adequate supply of electricity at the lowest possible cost.

In addition, the Council is required to develop an independent forecast of how much power the region will need between now and 2000, to establish model conservation standards, and to give "due consideration" to environmental impacts of energy projects, their compatibility with the existing system, and fish and wildlife requirements.

The Council's other principal task — one that may have a tremendous impact on the energy plan — is development of a program to "protect, mitigate, and enhance" fish and wildlife in and along the Columbia River and its tributaries. For the first time, the law brings together the often warring elements of utility and fisheries experts and requires the Council to come up with a plan that will supply adequate power and protect fish runs.

The law also requires the Council to work closely with B.P.A., local utilities, (Turn to page 5)

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Comments sought on fish, wildlife program



Photos courtesy of Oregon Department of Fish and Wildlife

Are you concerned about reduced fish runs on the Columbia River? Do you have ideas about how to increase the runs? The Northwest Power Planning Council would like to hear your comments.

The Council is required by law to establish a program to "protect, mitigate, and enhance" fish and wildlife dependent on the Columbia River. We have received recommendations for this program from federal and state fish and wildlife agencies, Indian tribes, and other interested organizations and agencies. We are now seeking comments on these recommendations, both written comments and testimony at public hearings.

The recommendations are available for public use at the following locations:

Northwest Power Planning Council

Central Office
700 S.W. Taylor, Suite 200
Portland, Oregon

Council State Offices

Towers Building, 3rd Floor
Boise, Idaho
155 Cottage Street Northeast
Salem, Oregon
Old Board of Health Building
1301 Lockey
Helena, Montana

Washington State Energy Office
400 East Union
Olympia, Washington

Bonneville Power

Administration Offices

Suite 288, 1500 Plaza Building
1500 Northeast Irving Street
Portland, Oregon

Room 206, Federal Building
211 East Seventh Street
Eugene, Oregon

Suite 117, Morris Building
23 South Wenatchee Avenue
Wenatchee, Washington

1620 Regent
Missoula, Montana

Room 561
United States Courthouse
West 920 Riverside Avenue
Spokane, Washington

West 101 Poplar
Walla Walla, Washington

Highway 2 District Office
Kalispell, Montana

531 Lomax Street
Idaho Falls, Idaho

Copies may also be ordered from the Northwest Power Planning Council. Please contact Torian Donohoe at (503)

222-5161 for more information. Summaries of the recommendations are also available.

Public hearings have been scheduled as follows:

March 15 and 16, 1982

Hilton Hotel
921 S.W. 6th
Portland, Oregon

March 18, 1982

Yakima Indian Nation
Tribal Headquarters

Fort Road
Toppenish, Washington

March 23, 1982

Idaho Department of
Fish and Game

600 S. Walnut
Boise, Idaho

March 26, 1982

Village Red Lion Motor Inn
100 Madison
Missoula, Montana

Hearings will run from 8:30 a.m. to 5 p.m. and from 7 to 10 p.m. Those wishing to present oral testimony at a public hearing should register at least three weekdays before the hearing by calling Torian Donohoe at (503) 222-5161.

Council's technical work progresses

Work is underway on a number of technical studies to be used by the Council in drawing up the regional energy plan.

Contractors were chosen in December to carry out the full-scale studies. The individual studies and work which integrates the various study areas will continue into the fall.

There are six study areas. The first study focuses on developing a computer model for forecasting regional energy demand. This model will be used to create alternative forecasts, considering such issues as economic and population growth, increased use of conservation and renewable resources, and electricity rates. There are three contractors for study module I: Charles River Associates, Jerry Jackson & Associates, and Cambridge Systematics.

The second study area looks at electrical energy supply alternatives, including conservation. The contractor, Battelle

Northwest, is gathering information on a number of resources in order to assess their economic and technological feasibility, environmental impacts, major barriers to their use, and fisheries constraints.

Policies and programs are the focus of the third study area. Questions to be considered include: What programs can be developed that will promote increased use of conservation and renewable resources? What strategies can be used to implement these programs? This study will also develop model conservation standards. The contractors are Applied Management Sciences and Mathematical Sciences Northwest.

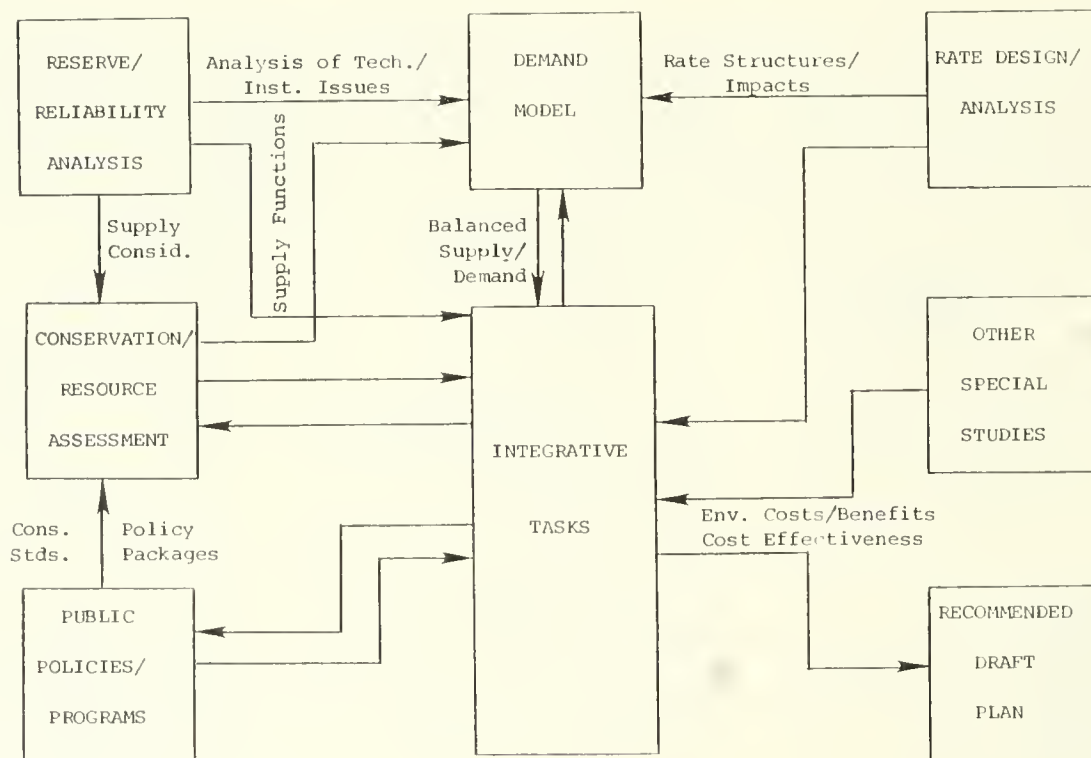
The goal of the fourth study area is to design a structure for electricity rates that will promote conservation and the development of renewable resources. The study is considering the impacts of a number of possible rate structures on elec-

tricity use. The contractor for this study is ICF.

The fifth study area looks at the region's electricity generating system as a whole. Energy supply planning for a hydropower system is unique. As other resources are added to the region's hydro base, questions need to be asked about the way the system is used to assure reliable electric power supply. This study focuses on issues related to electric power reserves and system reliability. The contractor for study module V is ICF.

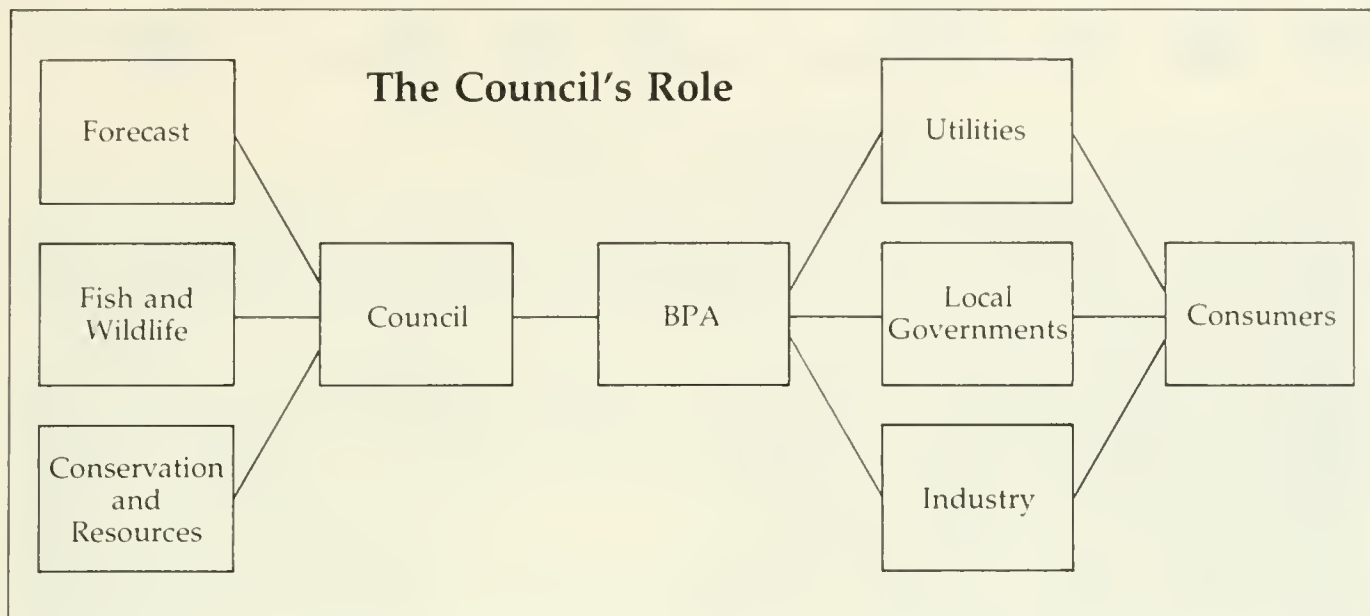
The goal of the sixth study area is to develop a consistent method to assess the environmental costs and benefits of conservation and all energy resources. This study extends work already begun in the area by the Bonneville Power Administration. The contractor is Nero & Associates.

OVERVIEW OF STUDY MODULES



The six study areas (or study modules) will serve as technical inputs to the Council's draft regional energy plan. Each of the studies will provide information for use in other studies. For example, the design of retail electricity rates will have an impact on the expected demand for electricity. Policies and programs for implementing conservation will directly affect the amount of conservation savings that can be expected in the region. The integration of all of these studies is being carefully planned.

The Council's Role



(From page 2)

the general public, and scores of others as it develops the regional plan.

The Council is a unique institution. Created by Congress, established by states, it will set policy for a federal (albeit regional) agency, the Bonneville Power Administration. (The Council's role and relationship to B.P.A. is analogous to that of a legislative body to the executive branch: the Council lays out a program; B.P.A. carries it out). Council members are appointed to three year terms, serving at the pleasure of the individual Governors, and paid for their work on either a full- or part-time basis. The Council is funded from a surcharge on B.P.A.'s wholesale rates.

The Northwest Power Planning Council is charged with bringing order and purpose to the region's energy future — making sure we have the power we need at the lowest possible price.

The Council's Planning Process

April 1981

Northwest Power Planning Council established

November 1981

Receipt of recommendations for fish and wildlife program

December 1981

Selection of contractors for technical studies

January-August 1982

Contractor work on studies

March 1982

Public hearings on fish and wildlife program

March-April 1982

Town hall meetings

July 1982

Energy workshops

July 1982

Draft fish and wildlife program

July-August 1982

Hearings on draft fish and wildlife program

November 1982

Draft regional energy plan

November 1982

Final fish and wildlife program

January 1983

Public hearings on draft energy plan

April 1983

Final regional energy plan

Broad representation on Council SSAC

The Council has established a Scientific and Statistical Advisory Committee (SSAC) to provide information to the Council on the scientific and technical aspects of the regional energy plan. The Regional Act requires a broad representation on the SSAC, including state and local governments, Indian tribes, consumer groups, utilities, and industry.

The SSAC was divided into five subcommittees: Conservation, Fish & Wildlife, Forecasting, Reserves & Reliability, and Resource Assessment & Programs. In addition, an Executive Committee, composed of the chairpersons and vice chairpersons of the various subcommittees, was formed to integrate the work of the

subcommittees. The chairperson of the SSAC is Jack Robertson, former regional director for U.S. Department of Energy, Region X.

The subcommittee chairpersons are:

- Conservation: Mike Gleason, City of Eugene, Oregon
- Fish & Wildlife: John Hough, International Telephone and Telegraph
- Forecasting: Belinda Pearson, Seattle First National Bank
- Reserves & Reliability: Merrill Schultz, Intercompany Pool
- Resource Assessment & Programs: Wendell Satre, Washington Water Power Company

Members of the SSAC represent a wide

variety of interests. Members include Wes Engstrom from the Boeing Company; Ron Eggers, Columbia River Inter-Tribal Fish Commission; Donna Klemka, Seattle City Council staff; Don Barclay, Idaho Power Company; Linc Wolverton, Public Power Council; Mark Reis, Northwest Conservation Act Coalition; Peter Shen, Washington Public Power Supply System; and Pat Graham, Montana Fish, Wildlife, and Parks Department.

The SSAC meets on a regular basis to consider technical issues involved in contractor work on study modules and to provide other technical assistance to the Council.

Townhall meetings announced

The Northwest Power Planning Council will be hosting a series of town hall meetings in the region during March and April.

The ratepayers of the Northwest represent the Council's largest constituency. The town hall meetings are directed at this constituency. The purpose of the meetings is to introduce the Council's members in the local communities and to discuss the Act and the Council's role in the region.

The town hall meetings will be open to the public and will provide an opportunity for the public to ask questions and make comments to the Council about critical energy choices that face the region.

The town hall meetings will also provide citizens with an opportunity to learn how they can become more involved with the Council and its work.

MEETING SCHEDULE

OREGON

- April 5 Pendleton, Blue Mountain Community College
- April 12 Medford, Court House Auditorium
- April 13 Coos Bay, Library Auditorium
- April 14 Eugene, City Council Chambers
- April 19 Portland, City Council Chambers

IDAHO

- March 30 Pocatello, Hilton Inn
- April 13 Lewiston, Lewis-Clark College
- April 15 Coeur d'Alene, North Shore
- April 27 Boise, Hall of Mirrors

MONTANA

- March 23 Kalispell, Outlaw Inn
- March 25 Missoula, City Council Chambers
- March 29 Billings, Northern Hotel
- March 31 Helena, City Commission Chambers
- April 2 Butte, Community Building

WASHINGTON

- April 29 Spokane
 - May 4 Yakima
 - May 13 Seattle
 - May 18 Bellingham
 - May 20 Longview
 - May 24 Tacoma
- (Sites not confirmed)

For further information and meeting locations, please contact Torian Donohoe at 1-800-547-0134 (in Oregon, call 1-222-5161).

Introducing the Northwest Power Planning Council

KEITH L. COLBO: Montana, served as Executive Assistant to Montana Governors Ted Schwinden and Tom Judge. He has been the director of four Montana Departments: Fish, Wildlife and Parks; Social and Rehabilitation Services; Budget and Program Planning; and Revenue.

CHARLES T. COLLINS: Washington. Between 1976 and 1979, he was Director of the Transit Municipality of Metropolitan Seattle. Mr. Collins was Chief Administrative Officer of King County 1973 to 1976 and Administrative Assistant to the King County Executive between 1969 and 1972.

DANIEL J. EVANS: Washington, now the President of the Evergreen State College in Olympia, WA. Mr. Evans was Governor of the state of Washington between 1965 and 1977. He served as Chairman of the Western Governors' Conference, 1968 to 1969, and Chairman of the National Governors' Conference, 1973 to 1974. Mr. Evans was a member of the Washington State House of Representatives between 1956 and 1965, serving as Republican Floor Leader 1961 through 1965. He was a partner in the structural engineering firm of Gray and Evans between 1960 and 1965.

ALFRED A. HAMPSON: Oregon, presently a partner in the Portland law firm of Hampson and Bayless. He has been a member of the State Energy Facility Siting Council (EFSC) since February 1, 1980, and chairman of that organization since September 11, 1981. Mr. Hampson has also been Chairman of the state Travel Information Council since 1971. He is chairman of the Portland Park Foundation, a founder and member of the board of the 1000 Friends of Oregon, and a member of the board, Trustees of Oregon Law Institute.

ROY H. HEMMINGWAY: Oregon, was Special Assistant to the Public Utility Commission of Oregon. Mr. Hemmingway was Deputy Public Utility Commissioner, Director of Utility Programs between 1977 and 1979. He was Assistant to Governor Robert Straub, 1976 to 1977. Between 1974 and 1976, Mr. Hemmingway was Legislative Director and Staff Attorney of the Oregon Environmental Council. He was an associate at a Portland law firm between 1972 and 1974.

GERALD H. MUELLER: Montana, has been Administrative Assistant and Energy Advisor to Montana Governor Ted Schwinden, and was Administrative Assistant and Energy Advisor to Lt. Governor Schwinden between 1978 and 1981. Mr. Mueller was Program Manager, Major Facilities Siting Act in 1978. He was Air Analyst for the Energy Planning Division, Montana Department of Natural Resources and Conservation between 1974 and 1977.

LARRY MILLS: Idaho, worked at Boise Cascade Corp. as Director of Governmental Affairs, Director of Corporate Relations, and Public Relations and Personnel Manager from 1954 through 1977. Mr. Mills was Administrative Assistant to Congressman Budge from 1951 through 1954. Mr. Mills was Idaho State Representative for Boise County 1940-1942, for Latah County 1946, 1948, 1950-52, and for Ada County 1962-1966. From 1951 to 1953 he was Speaker of the Idaho House of Representatives.

ROBERT W. SAXVIK: Idaho, served Idaho Governor John Evans as Chief of Staff from 1978 to 1981. He was Vice President and General Manager of KBAR in Burley, Idaho, from 1961 to 1978. Mr. Saxvik served three terms in the Idaho State Senate, where he was Assistant Senate Minority Leader. He was Legislative Liaison with the Governor from 1977 to 1978, and Director of the Office of Aging in 1978.

I N T H E N E W S



Photo courtesy of WPPSS

Better times: Here crews set the pressurizer to WPPSS 4 during work last April. Today, the plant stands ghostly still.

1982 brings WPPSS tough times and some bright spots

Plants 4 & 5 terminated; \$850 million record bond sale for 1-3

For the Washington Public Power Supply System these early months of 1982 have resembled the Northwest winter — some good days; some bad.

Since last spring's recommendation by managing director, Bob Ferguson, to reevaluate WPPSS plants 4 and 5, the Supply System has been wrestling with what to do about the last two of its five nuclear projects under construction.

But the debate came to an abrupt end in January when a number of Northwest public utilities balked at making any contribution to a proposed "mothballing" of the last plants. The death of the mothballing plan came despite the efforts of a number of re-

gional officials, including Northwest Power Planning Council chairman, Dan Evans. Evans, speaking for himself and fellow Washington Council member, Charles Collins, urged the 88 participants in WPPSS 4 and 5 to mothball the plants until the Council completed its plan in April of 1993. While the mothballing would have given the Council time to fully evaluate the need for new power generation in the region, some utility people also saw the deferral program as a way of putting together an orderly termination if the plants were indeed going to be eventually scrapped.

The mothballing plan evaporated, however, when the Clark County Public Utility

District and the City of Tacoma, two of the largest holders in WPPSS 4 and 5, said no to any loans for the mothball period.

On January 22, the WPPSS board of directors voted to terminate the plants. The board estimated that termination of plants — in which \$2.25 billion dollars has already been invested — would cost the 88 participating utilities roughly \$340 million dollars. But because the sponsoring utilities are not required to put up any money for the first year after termination is declared, WPPSS found itself in a position of having to borrow money in order to close the plants down and settle outstanding contracts. To go

along with money already in WPPSS coffers, the Supply System said it needed \$70.5 million dollars from the various sponsors.

The efforts to secure the loans, however, ran into some trouble. Oregon utilities questioned whether they would be able to pay any of the termination costs because of an Oregon law preventing payment for plants not yet finished. In addition, a number of small utilities and consumer co-ops throughout the region, holding small portions of WPPSS but very large cost obligations, objected to making any loan to the Supply System beyond what was required in their participant agreements.

The potential financial fall-

out from a default on the \$2.25 billion dollars in outstanding bonds on plants 4 and 5 prompted a unanimous resolution by the Northwest Power Planning Council, urging the participants to do all they could to execute a "controlled termination." In addition, a number of Wall Street analysts cautioned that the bond market could take a very adverse view of the Supply System's remaining plants if a default occurred on WPPSS 4 and 5.

At a January Council meeting in the TriCities, Ferguson told the eight-member panel that the termination of 4 and 5 would be carried out in a three phase method — and he added that termination might not mean the end of WPPSS 4 and 5. Ferguson said if the plants were shown to be needed and cost-effective even as late as April 1983, when the Council's final plan is adopted, there would still be a chance of reviving the projects if the licenses could be retained in the interim period. Meanwhile, Ferguson said, he would look to sell the projects to some other consortium of perhaps public or private utilities. This would provide the participants in 4 and 5 with the greatest return on money already spent. If that failed, Ferguson told the Council, he would be forced to cannibalize the plants and try to sell the parts individually. If neither of the first two options work, Ferguson said they would finally have to totally scrap the plants, perhaps as far as restoring the Washington sites at Hanford and Satsop.

In fact, as late as February 26, WPPSS still was having trouble with termination when they came up \$1.5 million short for the needed loans.

While the drama was playing out over the termination of plants 4 and 5, WPPSS was also headed to the bond market to replenish the money spent for plants 1, 2, and 3 since their last bond sale in September. With plants 1 and 2 due to run out of money by the first of March without a new infusion of cash, it was vital for WPPSS to stabilize termination of plants 4 and 5 so that they could enter the bond market again.



Good news: Ferguson tells the Council work is running ahead of time, within budget.

By mid-February WPPSS was back at Wall Street, this time with the largest single public offering of municipal bonds on record — \$850 million. The bonds, carrying an average interest rate of approximately 15.12%, sold quickly and provided the consortium with the needed infusion of cash. At that interest rate it will cost ratepayers \$4.6 billion for the long-term bonds which come due beginning 2012.

But the latest financial trans-

fusion still won't be enough to complete the projects, now estimated to cost roughly \$12 billion. In fact the Supply System plans on going back to the bond market within the next 90 days with a \$520 million bond offer. WPPSS says that would keep them on schedule and carry on construction through December.

Meanwhile, WPPSS plans on going to Washington State voters in September under the first election required by Initia-

tive 394. Passed last year, the initiative requires voter approval of any bond sale for major power projects. WPPSS figures it needs an additional \$3 billion in order to complete the first three plants.

The September vote will come against a backdrop of rising rates due to the costs of termination and Bonneville's latest wholesale price increase, and protests from ratepayers in Public Utility Districts around the region.

In Springfield, Oregon, two ratepayers have filed suit against the Springfield Utility Board seeking a court ruling to throw out their existing contract with WPPSS and to prevent the city-owned utility from paying any of its obligations on plants 4 and 5. In mid-February, roughly 3,000 ratepayers assembled in Grays Harbor County to protest the estimated cost increase that would be coming their way because of Grays Harbor PUD's participation in WPPSS 4 and 5. Further, a Wenatchee, Washington man, Dan Leahy, has formed a political action group called People Under Democracy, to help finance candidates running against incumbent PUD commissioners in Washington State.

Meanwhile, there was some good news for the beleaguered consortium. Ferguson said management changes he made since coming to WPPSS in August, 1980, have resulted in dramatic increases in production and quality. He said construction progress at WPPSS 1, located on the Hanford Reservation in Eastern Washington, was running ahead of the industry average and was coming in within the 1982 budget despite a five month work stoppage and a change in management. In addition, Ferguson said work at WPPSS 2, 87% finished and set for fuel loading in late 1983, has received a recent green light from the Nuclear Regulatory Commission following an NRC inspection in August.

So with spring just around the corner, it appears that WPPSS has managed to weather the worst of winter. But as so often has been the case, it is unclear whether the skies have cleared for good.

Council statement on WPPSS 4, 5

The Council has not decided whether WPPSS 4 and 5 will be acquired under the Act and will not decide until April, 1983; however, the Council is deeply concerned about the consequences of an abrupt, uncontrollable "termination" of the WPPSS 4 and 5 plants. If WPPSS becomes unable to pay its bills, a default condition could be triggered, imperiling financing of WPPSS 1, 2 and 3; threatening huge rate increases; eroding the ability of Northwest utilities to do any financing (even for conservation and renewables); causing all public borrowing from the Northwest to be viewed with apprehension by investors; and removing control from utilities and public authorities over the Northwest's future power supplies.

The chaos that would result from default would endanger the economy of the region, the standard of living of every Northwesterner, and the future of public power, both regionally and nationally. The orderly planning role envisioned by the Regional Act for this Council would be rendered impossible.

The Council does not urge a particular solution on the WPPSS participants, whether a "mothballing" or a "controlled termination" or some other option.

The Council urges the region's utilities and all Northwest citizens to devote their fullest efforts to finding a responsible solution to the WPPSS 4 and 5 problem.

T.V.A. weighs mothballing 3 N-plants

The board of directors at the Tennessee Valley Authority, re-evaluating their own ambitious nuclear power program, will meet later this month to decide whether they should defer three of their multi-billion dollar projects.

"Forecasts of load growth have become successively lower," said a TVA spokesman. In fact, a TVA revised forecast shows that the federal agency may have a long term surplus of 3,000 megawatts if it continues on its present construction schedule for three nuclear facilities now underway but not yet completed, Hartsville Units 1 and 2 and Yellow-Creek 1.

TVA, the Depression era cousin of the Bonneville Power Administration, has already spent \$2.2 billion on the three projects, which are anywhere from 42 to 33% completed. The federal power authority estimates it will need another \$8 to 10 billion dollars to finish the projects, bringing them in at a cost of about \$2,000 per kilowatt. By comparison, TVA's Browns Ferry Unit 1, finished in 1974, came in at under \$300 per kilowatt, and TVA officials believe that Yellow-Creek 1, the plant farthest from completion, could cost as much as \$3,000 per kilowatt.

The board of directors will be looking at whether to defer the plants or continue building them with the intent of either using the surplus power to offset present coal generation or to sell a surplus to other utilities in the region. The possible deferrals would come after TVA has already mothballed five units at earlier construction stages.

TVA officials say that in large part the deferral decisions are coming about because of the agency's aggressive conservation programs over the last few years.

B.P.A. estimated rate hikes

	CENTS PER KWH July 1, 1981	CENTS PER KWH Oct 1, 1982
PUBLICLY OWNED UTILITIES AND INVESTOR OWNED UTILITIES (PRIORITY FIRM)	1.14	1.85 To 2.05
DIRECT SERVICE INDUSTRIES	1.73	2.1 To 2.25
NEW RESOURCE RATE (IOU LOAD GROWTH & NEW LARGE, SINGLE LOADS)	3.24	3.5 To 3.9

REPRESENTS PERCENTAGES
OF INCREASE UP TO
80% FOR PRIORITY FIRM,
30% FOR DSI's, AND
20% FOR NEW RESOURCES.

B.P.A. rates may jump 80% next year

The wholesale cost of Bonneville Power Administration power will jump by perhaps as much as 80% this fall, B.P.A. Administrator Peter Johnson announced in early February.

For public utilities that will mean a wholesale increase from an average of 1.14 cents to between 1.85 and 2.05 cents per kilowatt-hour, Johnson said. This rate would also apply private utilities whose purchases to meet residential and farm customers power demands.

B.P.A.'s direct service industries, largely the region's aluminum plants, will be paying about 30% more for their lower grade interruptible power, or roughly 2.1 to 2.25 cents from the present 1.73. The federal power marketer's most expensive power, for load growth of private utilities and new single loads of 10 megawatts or more, will be going up 20%, from 3.24 to between 3.5 and 3.9 cents per kilowatt-hour.

Johnson said the rate increases "reflect the new economic realities," and largely attributed the hike to B.P.A.'s growing tab for the first three

Washington Public Power Supply System plants, which Bonneville is financially underwriting.

Johnson said the increased WPPSS costs included the first interest payments on bonds sold for Plant No. 3, of which B.P.A. is covering 70% of the costs, construction cost inflation, higher than expected interest on recent bond sales, and some of the so-called "twinning" costs of terminated Plants Nos. 4 and 5 falling back on the B.P.A.-underwritten Plants Nos. 1 and 3.

The remaining portion of the increase is to pay for conservation programs, acquisition of new power resources and general inflation in the operation and maintenance of the federal power system, the B.P.A. chief said.

"While B.P.A. rates will be higher than any of us would like to see," said Johnson, B.P.A.'s wholesale power rates will still be among the lowest in the nation. To keep rate increases down, Johnson said the federal agency was tightening its fiscal control on the WPPSS projects and looking at other avenues to control cost.

As for consumers, public utility ratepayers, depending on how much B.P.A. power their utility buys, could be looking at anywhere from 15%

to 40% retail rate increases to cover the higher wholesale power.

The B.P.A. wholesale rates, set to go into effect October 1, 1982, must first be approved by the Federal Energy Regulatory Commission.

PGE raps B.P.A. conservation efforts

The Bonneville Power Administration's conservation programs recently came under attack from an unexpected source — Portland General Electric Chairman Robert Short.

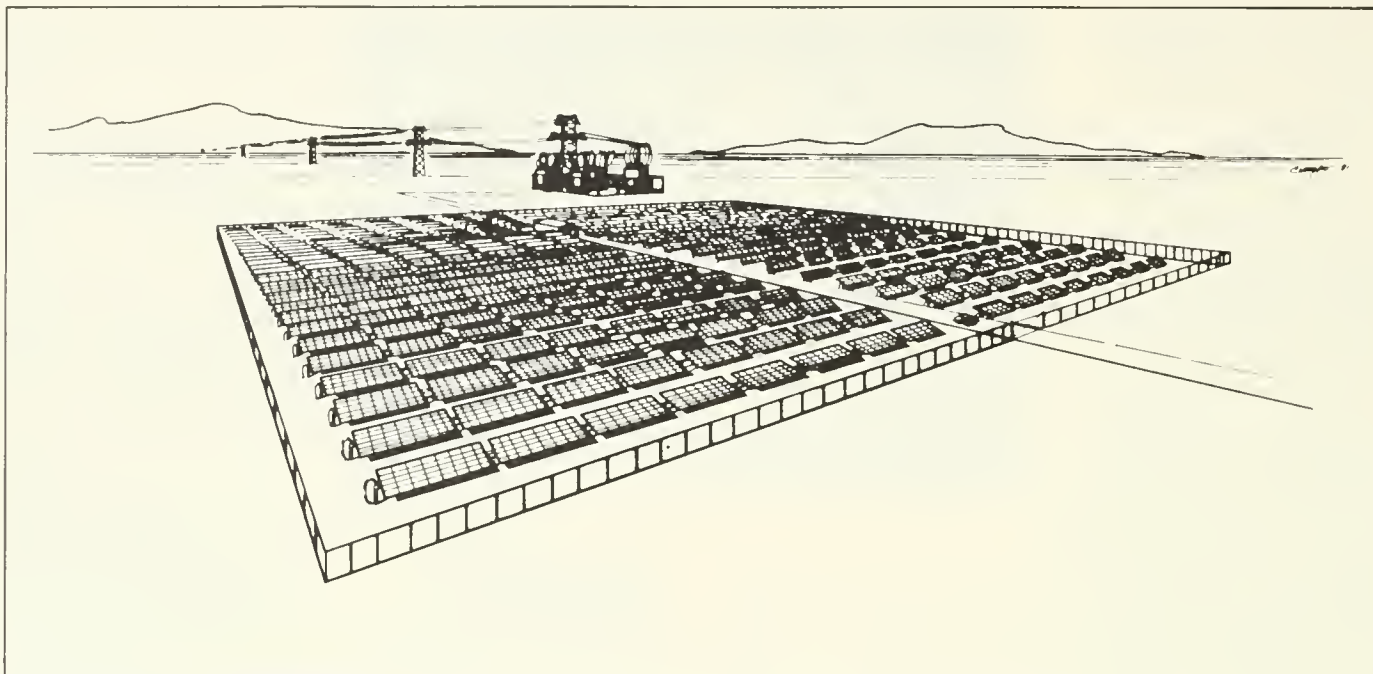
"B.P.A. has elected to pay less for conservation than the cost of new resources, despite the seemingly clear language in the Act saying that it can pay for up to 110 percent of the cost of other resources for conservation," Short told members of Portland's City Club January 22.

Short noted that the Northwest Power Act was supposed to encourage conservation efforts financed by B.P.A. "So far," said Short, "we're disappointed." The private utility exec said of the \$1.2 billion revolving fund B.P.A. can spend on conservation and renewable resources the federal power marketing agency intends to spend less than half that amount for 1982 and 1983.

Short said B.P.A. won't let utilities tap into the agency's conservation programs until utilities agree to sign long-term power purchase contracts, a potential sticking point for a number of private utilities in the Northwest.

"We can't make this commitment because B.P.A. will not clarify the rules regarding what costs are allocated to the rate pool that lies behind the power purchase contract," Short added.

So far, new B.P.A. requirements contracts — which commit customers to meeting their future power needs by purchase of B.P.A. power — haven't been selling very fast. The majority of the energy-



Down on the solar farm: Artist's conception of a photovoltaic "farm" proposed by several NW utilities.

intensive direct service industries and two small public utilities have signed contracts although the majority of public and private utilities are holding back. While a number of the public utilities appears likely to sign requirements accords, private utilities, such as Short's P.G.E., are apparently waiting to see what Bonneville plans to plug in as new resource costs and what conditions can be negotiated to provide an escape if the privates think it would be cheaper to go their own way some time later.

Meanwhile, as Short pointed out, consumers are caught in a Catch-22 as far as B.P.A.'s conservation programs.

NW Utilities offer B.P.A. 4 renewable plants

Several Northwest utilities, responding to a request from Bonneville Power Administration, have submitted proposals for BPA funding assistance under the Regional Power Act for four renewable power generating projects.

Classified as research and development projects, BPA has been asked to share the costs of feasibility studies for all but one of the projects and buy the power if they are built.

The four projects are in addition to a proposed 80,000-kilowatt windfarm on the southern Oregon coast submitted to Bonneville late last year by Pacific Power & Light, Portland General Electric and a southern California developer of wind-power generation.

The projects cover a wide range of renewable energy technology, including geothermal, central station solar, photovoltaic solar and fuel cells.

The proposals submitted to BPA, listing the developer and

the utility sponsors:

- A 10,000-kilowatt geothermal electric generating plant in northern Nevada, proposed for construction by Pacific Power, Eugene Water and Electric Board, Sierra Pacific Power Company and Sacramento Municipal Utility District. Feasibility studies for this project already have been completed. The four companies have organized a joint venture called NORNEV Demonstration Geothermal Company for construction and operation of the plant.

- An 11,000-kilowatt fuel cell project co-sponsored by United Technologies, Tektronix, Pacific Power and PGE. In a fuel cell, an electrochemical process combines oxygen and hydrogen to form water and emit electrical energy as a by-product.

- A 2,500-kilowatt central station solar plant, using 270 mirror-like devices focused on a solar receiver atop a 200-foot tower, heating air to operate a gas turbine. The project would be built by the Boeing Engineering and Construction Company for Pacific Power, PGE, CP National and Harney Electric Cooperative.

- A 2,000-kilowatt direct solar conversion photovoltaic

power plant in the Northwest, to be designed and built by the Acurex Solar Corporation of Mountain View, California. Photovoltaic technology uses a large number of panels containing silicon wafers which convert sunlight into electric energy.

Utility co-sponsors of the photovoltaic unit are Pacific Power, PGE, Pacific Northwest Generating Company, Harney Electric Cooperative, Inc., Burns, and Surprise Valley Electrification Corp., Alturas, California.

NRDC drafts 'model plan;' seeks comments

The Natural Resources Defense Council, a San Francisco-based environmental group long active in Northwest energy matters, is circulating a draft "model" plan, which calls for the deferral of all but one of the Washington Public Power Supply System plants and the addition of only two more coal plants in the Northwest.

While the NRDC forecast stays away from any fixed percentage, the NRDC draft plan lays out high and low scenarios. In the high demand scenario, the environmental group's tentative estimate is that total average megawatt demand will go from 16,541 in 1980 to only 17,376 by the year 2000. In the low demand scenario, power use drops from the 16,541 figure to only 12,993. Only three of the eight large scale plants now under construction in the region (Valmy Unit 2, Coal Strip Unit 3, and WPPS Unit 2) are counted in the NRDC report.

"If vigorous efforts were undertaken to increase the efficiency of energy use," the draft report says, the vast majority of the central station coal or nuclear plants now under consideration could be deferred or scrapped totally.

The draft report, still being circulated, was commissioned by the Northwest Conservation Act Coalition, a group of environmental groups in the Pacific Northwest that have

been following the work of the Northwest Power Planning Council.

Coalition to hold meeting April 2-4

The Northwest Conservation Act Coalition is holding a regionwide conference in Spokane, Washington on April 2-4, 1982. The conference, "Energy and the Northwest Economy; A Platform for Change," will focus on the regional economic implications of a Northwest Conservation and Power Plan. It will be held at Fort George Wright College and is open to the general public.

The Coalition, made up of over thirty citizens, labor, environmental, solar energy and consumer groups throughout the Northwest, coordinates

the work of its member groups on the implementation of the Northwest Power Act.

At the conference, the Coalition will adopt a "Model Conservation and Power Plan."

The Coalition will later present the Model Plan to the Council for its consideration.

The main program of the conference is scheduled for Saturday, April 3. In the morning, two panel discussions are planned: "Economic Implications of Energy Investments" and "The Power Act to Date: Promise or Disappointment?"

The luncheon speaker will be Oregon state Senator Ted Kulongoski, Chairman of the Senate Energy and Utilities Committee. Dr. John Holdren, Director of the Energy and Resources Program at the University of California, Berkeley, is tentatively scheduled as the dinner speaker.

Organizational workshops will be held on April 4.

For further information, contact:

Conference Coordinator
Northwest Conservation Act Coalition
P.O. Box 20458
Seattle, WA 98102
(206) 624-2875

Puget panels to consider conservation

Puget Sound Power & Light Company's newly formed Consumer Panels will be addressing energy conservation standards for residential and non-residential buildings within its service area, company president John W. Ellis has announced.

"The recommendations of the Panels on this subject will be used as a resource for planning and preparation of the company's recommendations to the Northwest Power Planning Council," Ellis said. The

PGE's Short on Utilities and Public Trust

The following are excerpts from a speech by Robert Short, chairman of Portland General Electric, given to the Portland City Club in January.

Since becoming chairman of PGE a little over a year ago, I've been trying to develop public attitude sensitivities in our management and employees.

For it is my contention that unless we and the other utilities in the Northwest — and here, I include the Bonneville Power Administration — become more sensitive to the desires of the public, we will be rendered ineffective by the fumes of public distrust.

Our failure to anticipate and respond effectively to public concern has brought us ballot measure after ballot measure, in Oregon and Washington. Some passed, others failed, but all should serve to give us a potent message:

"Failure to give weight to public concerns in making business decisions is to put your business at risk."

Now to some of you, that may seem so obvious that it is a point barely worth stating.

To others, who still believe that the only business of business is business, it may appear that PGE is trying to transfer its responsibility to provide an essential service from itself to the electorate.

Let me assure you, we are not. We are *not* running our

business as a popularity contest, or by public opinion polls. We're not going to defer to the slightest indication of opposition. We intend to express our views on how best to serve the electricity needs of our customers . . .

Last year I implemented an "attitude change" to accomplish this. Instead of our previous method of trying to sell the public on our decision through confrontation, we sought their opinion *before* we made a final decision.

In the past year, we proposed construction of two new hydroelectric facilities, one at Willamette Falls, the other at Marmot, near Mt. Hood . . .

While in both cases the decisions were not to build, the results were positive for PGE in two ways:

First, the experience of weighing public concerns along with technical and economic ones has made our management alive to issues that it had previously discounted.

Second, by going into the community and seeking advice, we have opened pathways of communications that will be invaluable to us in future decision making . . .

Our new attitude is not a weakness on our part, nor a lack of conviction in our decisions, present or past. The attitude is good business practice. We cannot afford confrontation.

As I said earlier, it's not just PGE, but all Northwest utilities, including BPA, which must develop sensitivity to the public if we are to earn the public trust that will allow us to continue supplying needed electricity to our customers. 9

Council is preparing a plan, scheduled to be available in April 1983, that will determine future energy needs of the Pacific Northwest.

Each of the five panels consists of 30 to 40 consumers, representing a variety of diverse interests within Puget Power's nine-county service area. They were formed from nominations submitted by various clubs and organizations, as well as business and government leaders.

"To date, we have had a tremendous response for participation, and we continue to welcome those interested to contact their local Puget Power office," Ellis said.

Tri-Cities group chides Council for SSAC members

A recent newsletter from a Tri-Cities group of scientists says that the Northwest Power Planning Council may be off to a "poor start" and "not grasp the urgency of its charter."

The article, written by Mike Fox, a board member of Washington Voice of Energy, criticizes the Council for even

considering possible "fuel switching" or the conversion to oil or natural gas for such uses as hot water heating.

"To compound the issue, the Council chairman, former Washington Governor Dan Evans has suggested that shortages of energy may be preferable to surpluses. This dangerous statement not only carries an ominous ring, it flies in the face of studies like the 1978 Northwest Energy Policy Project," says Fox in his article in the January issue of Wave-length, a publication of the Washington Voice of Energy.

"Moreover, the Council apparently does not realize that because of energy uncertainties, industries are already discouraged from expanding or moving to the Northwest," the article continues. "We are not optimistic that the Council is concerned about this problem or will adequately deal with it."

Fox, a Tri-Cities scientist, said that WAVE is also concerned about the composition of the Council's Scientific and Statistical Advisory Committee. "While intended to include science advisors, the only university representative from a scientific discipline is one noted for his anti-nuclear position," Fox writes.

CALENDAR

March 1, Resources Subcommittee Meeting, 7:00 p.m., Council Offices, Portland.

March 4, Council Meeting, 8:30 a.m., Holiday Inn, Missoula, Montana.

March 15-16, Fish and Wildlife Public Hearing, 8:30 a.m.-5 p.m. and 7-10 p.m., Hilton Hotel, Portland.

March 16, Executive Committee Meeting (SSAC), 1:00 p.m., Council Offices, Portland.

March 17-18, Council Meeting, 8:30 a.m., Council Offices, Portland.

March 18, Fish and Wildlife Public Hearing, 8:30 a.m.-5 p.m. and 7-10 p.m., Eagle-Seelatssee Auditorium, Yakima Indian Reservation, Toppenish, Washington.

March 23, Fish and Wildlife Public Hearing, 8:30 a.m.-5 p.m. and 7-10 p.m., Idaho Department of Fish and Game, Boise, Idaho.

March 23, Townhall Meeting, 7:30 p.m., Outlaw Inn, Kalispell, Montana.

March 25, Townhall Meeting, 7:30 p.m., City Council Chambers, Missoula, Montana.

March 26, Fish and Wildlife Public Hearing, 8:30 a.m.-5 p.m. and 7-10 p.m., Village Red Lion Motor Inn, Missoula, Montana.

March 29, Townhall Meeting, 7:30 p.m., Northern Hotel, Billings, Montana.

March 30, Townhall Meeting, 7:30 p.m., Hilton Inn, Pocatello, Idaho.

March 31, Townhall Meeting, 7:30 p.m., City Commission Chambers, Helena, Montana.

April 2, Townhall Meeting, 7:30 p.m., Community Building, Butte, Montana.

April 2-4, Northwest Conservation Act Coalition Regional Conference, Fort George Wright College, Spokane, Washington.

April 5, Townhall Meeting, 7:30 p.m., Morrow Lecture Hall, Blue Mountain Community College, Pendleton, Oregon.

April 12, Townhall Meeting, 7:30 p.m., Court House Auditorium, Medford, Oregon.

April 13, Townhall Meeting, 7:30 p.m., Library Auditorium, Coos Bay, Oregon.

April 13, Townhall Meeting, 7:30 p.m., Lewis-Clark College, Lewiston, Idaho.

April 14, BPA Workshop: Financing Conservation, Renewable Resources, and Cogeneration Symposium, 8:00 a.m.-4:30 p.m., Benson Hotel, Portland.

April 14, Townhall Meeting, 7:30 p.m., City Council Chambers, Eugene, Oregon.

April 15, Townhall Meeting, 7:30 p.m., North Shore, Coeur D'Alene, Idaho.

April 15, BPA/ODOE/WSEO Workshop: Financing and Marketing for Geothermal Energy, 8:00 a.m.-4:30 p.m., Benson Hotel, Portland.

April 19, Townhall Meeting, 7:30 p.m., City Council Chambers, Portland.

April 27, Townhall Meeting, 7:30 p.m., Hall of Mirrors, Boise, Idaho.

April 29, Townhall Meeting, (Location not confirmed), Spokane, Washington.

BRIEFLY

FORMALDEHYDE INSULATION BANNED — The federal Consumer Products Safety Commission, in a four-to-one vote last month, voted to ban insulation manufactured using formaldehyde. The vote came after four years of inquiries into complaints by consumers who had the formaldehyde insulation installed in their homes that the substance was causing eye, nose and throat irritations and other side effects. Urea-formaldehyde is a foam-based insulation commonly pumped into the wall cavities of existing homes. It is estimated that about 500,000 U.S. homes contain formaldehyde insulation.

CONSERVATION CUT 90% — Under the proposed dismantling of the federal Department of Energy and shifting of duties, conservation is coming up particularly short. 98% short, in fact. The Administration is slashing federal conservation efforts for Fiscal Year 1983 to \$4 million from the previous year's \$240 million. Renewable resource efforts receive similar treatment—cut from \$518 million to \$101 million, or an 81% cut. Meanwhile, the Administration includes \$252 million for development of the controversial Clinch River Breeder Reactor.

'I had personally asked our siting council to go back and review several times the projected growth rates . . . At that time, no matter how conservative we became, it didn't appear to be low enough to make any of these plants unnecessary.'

(From page 1)

I look back at a speech I gave in 1970 where I advocated then that Bonneville have as part of its governance — at that time I was suggesting — an input or participation by the states of the Northwest. At that time, many of the decisions Bonneville was making had impact on our economic growth potential, but the states had no input in what was happening. So here, ten years later, was an opportunity for states to be directly involved, and I thought what a great chance to help improve what I had advocated a long time ago as being necessary.

And the second one is from purely political science concept. This is a brand new and unique organization. It's born out of a federal act, made viable by four separate state acts and yet the end result is clearly a regional being. So, it's a new format to resolve regional issues and I think that our success lies not only in the opportunity to do something as far as our electric power future is concerned, but also in showing that this may be an effective alternative in an organizational sense to resolve some regional problems. Two very different, but I think important, reasons to take part.

How has the region's power scene changed from when you were governor to today as Council chairman?

Oh, remarkably. Let me go back to 1970, which was the year in which we passed and put into law the Energy Facilities Site Evaluation Council. In fact, it initially was a nuclear facility siting council and was later broadened to include all major energy facilities. We recognized then with the advent of a new phase of power development in the Northwest, the hydro-thermal system, that a series of new, complex power facilities were going to be proposed. So, in many respects, in 1970 we were trying to expedite what appeared to be badly needed new power facilities as we rapidly reached the end of acceptable major hydro sites.

The next several years saw the first applications for nuclear plants come before the Siting Council and they were approved. By the time I left office, we had approved all five of what subsequently became the WPPSS plants. As I remember, we approved at least one of the Skagit plants for Puget Power. Those approvals were given only after I had personally asked our siting council to go back and

review several times the projected growth rates and electrical usage to see if we really needed these plants. At that time, no matter how conservative we became in the growth of electricity, it didn't appear to be low enough to make any of these plants unnecessary. We had come out of the Boeing recession, we were in a period of strong economic and population growth in the mid 1970's, and there was every expectation that that would continue. We had to prepare for that with the necessary electric power to support increased population and increased industry.

So that period of time was one of expediting, of attempting to get the necessary power on line in time for its need. There was a recognition that new electric power would cost more — that the marginal cost would be higher than the average cost — but not significantly more because the estimates at that time were moderate in terms of cost of new plants, and there was nothing on the horizon that would have told us the extensive delays that have ensued. Now we are in a stage where I think we have reached the end of the hydro-thermal system development concept in the Northwest. We are entering a new phase which is broader and has more individual elements to it than just the hydro-thermal system concept.

What about the Council's role and how it relates to Bonneville and the utilities?

We're in many respects the new kid on the block because the Council is the one new agency involved in this picture, where Bonneville is a continuing body although with some very large new responsibilities. Various utilities (public and private), the direct service industries, the other elements mentioned in the Act are essentially all existing. So, suddenly we're fitting a new body into this picture and it has changed relationships. I guess the most important continuing one is with Bonneville. Someone suggested that the Council is really a board of directors of Bonneville, but that's not an accurate perception. Bonneville has operating responsibilities, the Council has planning responsibilities. The intertie, of course, is where the Council's planning responsibilities have an effect on the operation of Bonneville, the various utilities, and the direct service industries. There are numerous places where that occurs. There is little wonder that in the initial stages of

this we are finding some frictions, some misunderstandings as we attempt to find these appropriate relationships and roles.

The Council, for its first seven or eight months of existence, has spent most of its time asking questions. At times we've seemed rather contentious when we have done that, but it has been in search for as much information as we could get. The relationship with Bonneville always is going to be one of — I've called it creative tension. We are going to have differences of opinion because we have different roles to play, but as long as there is a healthy exchange of information between the two groups and an understanding of each other's different roles, I think we'll get along increasingly well.

Utilities, of course, and the direct service industries are watching both the Council and Bonneville because they are subject to both the planning proposals which come from the Council as well as the operating and management style that comes out of Bonneville. They are subject to both of us in some respects. So they are watching this change with great interest. At times I think they have felt that the Council initially looked as if it was going to get too far into the whole planning and operating of the Northwest utilities. I think maybe as again we build better communication between the two, that's beginning to relax somewhat.

What should the region's energy policy then look like in the next twenty years?

I think we're entering a period of great uncertainty, both nationally and regionally. It's difficult to predict ahead with any accuracy what the actual use of electric power will be. It's going to be affected by population growth, by economic growth, by new technologies which may actually reduce dependence on electric energy. It is going to depend on national fuels policies, fuel switching — there are a whole host of things which will affect our policy and all of these add up to more and more uncertainty.

The response to that is, I think, to see what we can do to prepare ourselves to respond to these uncertainties. That means planning for a future with a greater variety of resources, with resources that have shorter lead times than the major thermal plants we are now contemplating. Then our energy policy ought to be, a portion of it, devoted to carefully tracking

*'I think we're entering a period of great uncertainty . . .
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these changing variables so that we can get early warning of a new trend in electrical usage, whether up or down. If the trend is down, we can delay or hold back on any new resource development. If the trend is up, then we ought to be prepared to move rapidly with these new facilities and, for the most part, new facilities which have short lead times, quick response to this uncertainty.

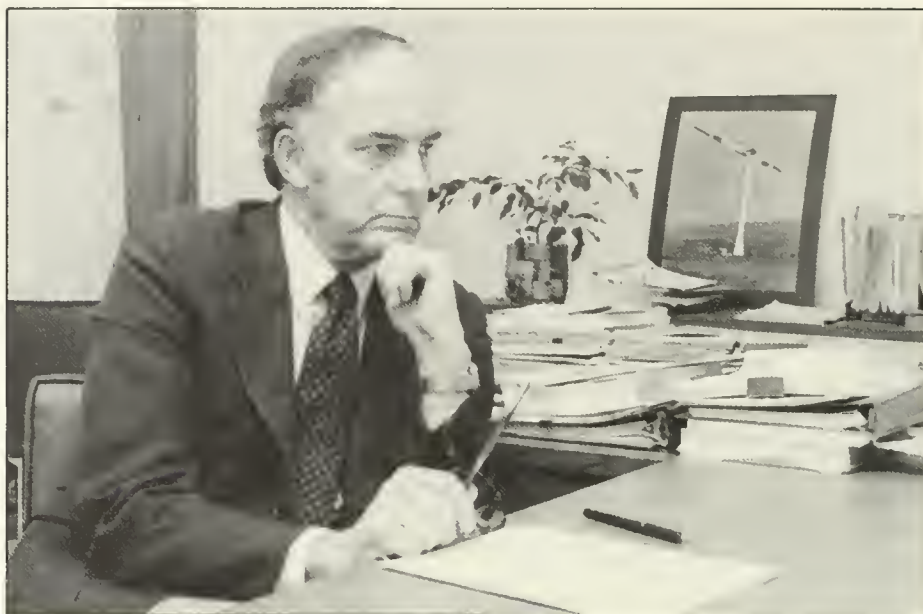
I'm using resource in a very broad sense because to me, new resources, in other words, the gaining of available kilowatts for assignment to a new customer, can come from a major new thermal plant. They can come from small hydro facilities or solar or a whole variety of other renewable resources. It can also come from conserving an existing use somewhere else, greater efficiencies in appliances, even fuel switching where that is appropriate to other fuels. These all represent resources because in each case it frees up kilowatts to be used for new needs. To most people, when you talk about new resources, they contemplate new plants or new generating facilities, but I think that's far too narrow a view.

How do you go about getting conservation on a broad scale?

Oh, I think price does more than anything else to convince people to conserve. It certainly has worked in gasoline and oil supplies. As prices have gone up, people find alternative ways to carry out their needs. It's not a case necessarily of reducing your lifestyle or freezing in the dark as someone suggested. We have found more efficient automobiles. We have developed ways of doing things that just don't use as much fuel. I think the same thing will happen as people understand that the price of electricity, and especially the price of new generating resources, is going to be much more expensive. I think it is important to get that accurate price signal so people understand it, then I think we'll see a significant increase in efficiencies of electrical use and conservation.

There's lots of potential conservation out there. Some people are taking pretty fair advantage of conservation and better efficiencies, and they're finding that it's cost effective. I think a very rapidly increasing percentage of our population will find the same thing once they feel the full impact of price increases.

Now I think along with price increases,



it will be valuable and feasible for utilities to offer price incentives as sort of the other side of the price increase stick that forces you to conserve — a price incentive, either a low cost or no interest loan or even a direct dollar rebate to engage in certain kinds of conservation. That's the carrot. It's certainly related to price, just in a different way.

I think that if we can do those two things — provide adequate incentives which are meaningful to the consumer and at the same time cost effective for the utility because it's cheaper to do that than to find some other way to get the electricity — then I think we can let the market itself do most of the rest of the effort. For instance, if, and I'm not suggesting this would ever be the case, but if utilities found that it was cheap, relatively, to offer a financial incentive or bonus to a consumer to buy a new efficient refrigerator and throw out their old one — and if they were to offer someone enough money toward the purchase of a new refrigerator to make it attractive, we would see refrigerator manufacturers respond pretty rapidly to build energy-efficient refrigerators which in turn would be the ones eligible for this kind of price incentive and the market development would happen pretty rapidly.

I think that that's a lot better approach than any governmental agency, whether it's the Council, Bonneville, or anybody else, saying here is a grand plan for precisely how we are going to do all these things and we are going to go through it

from step one through 200 and we're going to tell you how to do it and what to do and when to do it. I just don't think that is going to work anywhere near as well as the response of the market place — if people are understanding.

What is your impression of Bonneville's and the utilities' conservation efforts to date?

Well, I think everybody wants to have instant and almost miraculous response. I do think it is important to remember that Bonneville is into the conservation game for the first time. They have not had very much opportunity yet to develop these programs. They did not have that responsibility before. I think that they have moved relatively well. I think if anything they have moved surely because they wanted to be sure of the kind of program they put into effect and whether it made sense and was prudent. Remembering that any expenditures they make for conservation come out of the ratepayer's pocketbook as a cost. I think that the jury is still out on whether they have moved rapidly enough or not. But I do think we'll see an acceleration, that the planning state is coming to a close, that they're beginning to reach out now with operating programs. If we see an appropriate acceleration of those programs as they become better known and as people have a chance to respond to them — then, I think, we'll be in pretty good shape. If that doesn't

'The way in which you manage the dams has a great potential impact on fish runs . . . We may well have to operate the hydro system in a way that reduces its power producing capabilities . . . We are going to have to balance fish runs against power production.'



happen, then we're going to have to figure out some better, newer ways to push out and get a real response.

Utilities have moved faster than Bonneville because they have had the opportunity at least to engage in conservation for a long time. It's all a price kind of thing for them. If they run short of electrical production for the utilities, they can meet it through purchase of new electricity from someone else, whether it's Bonneville or outside the region or someone else in the region. Or they can reduce their load through conservation practices, and many utilities have found that that is the cheapest way to do it. And they have engaged in some rather innovative and worthwhile programs. But again, I think we are at just the beginnings of that. There is a lot more to be done. I think that, too, we'll accelerate in the next few years. I personally think that the combined effects of conservation programs and incentives developed by Bonneville and by the utilities with the price related conservation practices will add up to a lot more conservation than anybody is contemplating currently.

What's the importance of fish in the Council's plan?

They are exceedingly important because the law itself, in essence, says they're important. Also because of court decisions which have established very strongly the

rights of Indian tribes to maintain their fish catch guaranteed under treaties. That has an effect on what we do because the bulk of the fishery, of course, is from the Columbia River and its tributaries. That river is almost totally controlled by dams, from Bonneville clear to the Canadian border. The main stem of the Columbia, except for one small stretch, is tailwater behind various dams. The way in which you manage the dams has a great potential impact on fish runs: both on the upstream migrants, and to a greater degree on the downstream fingerlings. I think we're going to have to come up with a plan which minimizes damage to those fish runs. In doing so, we may well have to operate the hydro system in a way that reduces to some degree its power producing capabilities. In other words, we are going to have to balance fish runs against power production. That's where they interrelate, and that is why what happens to fish is exceedingly important to us in our deliberations.

What's going to go into the Council's plan as far as the forecast in determining how much power we need? What are things that need to be considered?

I think the most fundamental is whether we make a definitive forecast or not. That's been the past practice — to make fairly definitive forecasts based on the best information you had and then try to build

or respond to that specific forecast out a twenty-year time span. Given the current nature of change and the rapidity of change, I think it's increasingly difficult to make any kind of a long-range forecast and be remotely certain of its accuracy. So I think the Council is coming more and more to the conclusion that the best we can do is a forecast which narrows the range of uncertainty. There will still be a fairly broad uncertainty in exactly how much power will be required ten or fifteen or twenty years from now.

Once we have done the best forecasting job we can — utilizing some of the best current techniques and even some new techniques of modeling which are apparent in the studies which we are now carrying out — we still end up with a fairly broad range. And then the heart of our report or our plan will have to be the array of potential resources that can fit that whole range of uncertainties.

One way to put it is that we need a supermarket of potential resources that can be cataloged, put on the shelf, identified as to the load they would produce, the costs and the time span within which they could come on line. As we track very carefully what actually happens, as each year passes, we will be able to look more accurately into the year 1990 and 2000 as we get closer to them. We can detect, and I think that is an important thing for us to achieve, a method of tracking that detects early changes in population, in the economy, in whatever else will have an effect on the demands for electric power. Then we've got to be able to reach up on our shelves and find the right product — the right combination — in price, in amount, in lead time that will help plug the gap and keep us up-to-date with needs as they occur and as they change.

It seems to me if we do that job properly, we'll have considerably more flexibility in how we respond, and we'll be able to respond faster than we can today when we're depending so heavily on very large, very complex plants which produce a lot of electricity but have an inordinately long lead time. Because of that we are very uncertain as to the actual needs of those plants out ten or twelve years from now.

Some people say, why not just build in large quantities to make sure you got the buffer built if you need a bit more than you projected?

That's always been a guiding tenet of the utility industry, and it made all sorts of

'If we are successful, and that success is measured in ensuring an adequate supply of electricity at the lowest possible cost, then the Council means a great deal to the Northwest.'

sense when the marginal cost of electricity — the cost, in other words, of those new plants — was lower than the average cost of all of the existing facilities they had. Then you could afford to build extra. The rate of growth of electricity was such that it would soon use up that extra, and the average cost kept coming down because the marginal costs were lower. But now we are at a point where the marginal costs of electricity in the Northwest are so much higher than today's average cost that the economic consequences of overbuilding are very, very large. In fact, we're finding that right now in our inability to finance the five public power supply system plants.

We are in a dangerous time, at least for an intermediate period, in our energy planning. The dangers on the one hand are of insufficient energy supply that would put a damper on economic growth. But on the other hand, an overinvestment in exceedingly expensive plants could drain so much of the investment resources of the Northwest that that too could cripple our economy. I guess all of which means that the decisions are a lot tougher today and will require the best thinking of everybody in the Northwest and, I think, make the advent of the Pacific Northwest Power Act very important. It came at the right time, late if anything, and it finally has brought together the various entities

who will play a role in power production and power distribution. The Act has given us a new opportunity to do some power planning on a regional basis that we simply didn't have before.

What's all this matter to the average ratepayer though?

I think it can matter a great deal if the result of what we have set out to do is successful and the success would be measured by our assuring that there would be adequate supplies of power as we grow and as the needs grow with it. And that that power comes at the lowest possible cost. That doesn't mean that costs won't go up, because they will go up. But we've got to keep the cost from going up any more than is necessary. As I say, if we are successful, and that success is measured in insuring an adequate supply of electricity at the lowest possible cost, then the Council means a great deal to the Northwest.

What do you see as the region's future — you hear some people say that there is no help out of the morass we seem to be in — is there help?

Oh, of course. I am as optimistic as I can be about the future of the Northwest. It's

making a transition from its beginnings which were heavily resource oriented. We are a very new region of the country. There are people still living who are pioneers here in many respects. We began as almost any new land does with the first people mining the minerals, cutting the timber, fishing — working from the natural resource base because that's the only base they had initially.

We are rapidly, however, changing into a much more sophisticated economy. I would guess that twenty or twenty-five years from now the cyclical problems of the lumber industry will be of less and less importance to the Northwest because we will have built a much more stable and diversified economic base. We learn from each set of experiences and by the turn of the century I think this region of the country will be in the happy position of having an economic base which is in close tune with the international needs we will face then. We're a very productive food basket and we already ship a good share of that overseas. The Asian markets will continue to grow and be of greater importance to us as well as to the world, and our ports are particularly well located for that. In many respects, we will become the center of activity rather than being isolated out on the northwest shores of the continent.

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Wanted: A good crystal ball

The future isn't what it was, and planners are looking for ways to handle uncertainties

In 1976, as the region's utilities weighed buying a piece of Washington Public Power Supply System Plants 4 and 5, the City of Seattle was trying to figure out its own energy needs. As citizens, city planners, and officials from Seattle's city-owned utility, City Light, developed a comprehensive study, called Energy 1990, they focused on the major elements that go into any projection of future power demand. There was agreement on many of the factors — population growth, the types of industries, per capita income — but there was also a sticking point: the relationship of the use of electricity to the cost of electricity. Did the price of electricity matter? Did consumers use less — meaning less new power would be needed — the more power cost?

"There was a pretty hot debate over that," recalls John Gibson, then a policy analyst in the city's Office of Policy Planning and now a private consultant. "There was a lot of discussion whether that was accurate or legitimate or how people really behaved."

In fact, during a City Council hearing a City Light official

(Please turn to page 7)

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KING stations to air N.W. energy special April 21

A two-hour prime time special on current Northwest energy problems will be aired on April 21 by the KING Broadcasting System. "The Electrical Storm: A KING Northwest Network Energy White Paper" looks at what led up to the current WPPSS dilemma and accompanying protests over electric rate increases, and describes options for the region's future.

The special takes a brief history of the development of Columbia hydropower, and a look at the WPPSS situation, and a discussion of the Tennessee Valley Authority — an agency with problems similar to those of the Northwest that has taken steps to shut down several nuclear plants and put together an aggressive conservation program. "The Electrical Storm" then turns to the Northwest Power Planning Council. The program explains the Council's role to plan the region's energy future and the elements of the planning task: a forecast, a fish and wildlife program, and a regional energy and conservation plan. The Council's resource priorities — conservation and renewable resources are most important — are looked at in detail as options for the region's energy future.

The second half of the program will be a live, connected segment between the four KING stations in Seattle, Portland, Spokane and Boise. A discussion about important regional energy decisions will take place among members of the Northwest Power Planning Council, utility heads, citizens, solar and conservation advocates, and other concerned about these decisions.

The program will be aired on April 21 at 7:30 p.m. on KING in Seattle, KGW in Portland, and KREM in Spokane, and at 8:30 p.m. on KTVB in Boise. The program will air again in Seattle on May 2 at 10:00 a.m.

CALENDAR

April 14, Oregon, Townhall Meeting, 7:30 p.m., City Council Chambers, 777 Pearl St., Eugene.

April 14, B.P.A. Workshop: Financing Conservation, Renewable Resources and Co-generation, 8:00 a.m.-4:30 p.m., Benson Hotel, Portland.

April 15, ODOE/WSEO/BPA Workshop: Financing and Marketing for Geothermal Energy, 8:00 a.m.-4:30 p.m., Benson Hotel, Portland.

April 19, Oregon, Townhall Meeting, 7:30 p.m., City Council Chambers, Portland.

April 19, B.P.A. Billing Credits Meeting, Boise, Idaho.

April 20, B.P.A. Billing Credits Meetings, Portland, Seattle, Missoula.

April 21-22, Council Meeting, 8:30 a.m., Seattle Center, Mercer Forum III and IV, Seattle.

April 22, Conservation Subcommittee Meeting, (SSAC) 6-9 p.m., Council Offices, Portland.

April 23, Resources and Conservation Subcommittees Joint Meeting (SSAC),

9:00 a.m., Council Offices, Portland.

April 27, Townhall Meeting, 7:30 p.m., Hall of Mirrors, Boise.

April 29, Washington, Townhall Meeting, 7:30 p.m., City Council Chambers, Spokane.

May 4, Washington, Townhall Meeting, 7:30 p.m., Holiday Inn, Bellingham.

May 5, Forecasting Subcommittee (SSAC), 9:00 a.m., Council Offices, Portland.

May 10, Washington, Townhall Meeting, 7:30 p.m., Foss High School, 2112 S. Taylor St., Tacoma.

May 18, Washington, Townhall Meeting, 7:30 p.m., Seattle Center, Olympic Room, Seattle.

May 20, Washington, Townhall Meeting, 7:30 p.m., Lower Columbia College, Student Center, Longview.

May 21, Conservation and Resources Subcommittees Joint Meeting, 9:00 a.m., Council Offices, Portland.

May 25, Washington, Townhall Meeting, 7:30 p.m., Yakima Valley Community College, Hopf Union Building, Yakima.

I N T H N E W S



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Coming together: James Alexander, a 92-year-old Yakima fisherman, makes a point in Council hearing that brought together fisheries interests (left) and utility officials.

'To protect, mitigate and enhance...'

Council begins long process for plan to help Columbia's fish

March marked a rare coming together of fisheries and power interests as the Northwest Power Planning Council wrapped up five days of fisheries hearings throughout the four Northwest states.

"The climate for saving the fish runs is disturbing," said former Oregon Gov. Tom McCall, "But when you see a coalescing of those factions — the Indian fishermen, the commercial fishermen, and the sports fishermen, for the first time I can remember, there seems some hope."

The Council is required

under the 1980 Northwest Power Act to develop a program to "protect, mitigate and enhance" the salmon and steelhead runs along the Columbia and its tributaries along with developing a 20-year master energy plan. The fish program is aimed at making up for some of the losses caused by the dams along the river.

Recommendations were submitted to the Council last November from various state and federal fisheries agencies, Indian tribes and the Bonneville Power Administration.

The recommendations, which include proposals for stream flows, downstream migration aids and research and development, will become the foundation for the Council's eventual fish and wildlife program, to be adopted by November 15.

But utility officials warned that the river's power production could be reduced.

Merrill Schultz, director of the private utilities' Intercompany Pool, said recommended minimum flow requirements could reduce the river's power production by as

much as 490 megawatts, or roughly the generating capacity of a plant such as Colstrip Unit 3.

The Pacific Northwest Utilities Conference Committee suggested the Council consider "transporting" — literally loading into barges, trucks or trains — young fingerlings and shipping them downstream by man-made methods.

Some fisheries officials, however, balked, saying that transporting the fish was unproven and would throw off the salmon's and steelheads'

natural homing instinct.

Indian tribe members, however, said the Council must also weigh their historical treaty rights as they develop a fish plan.

The Council's fish plan, said Rudy Saluskin, a Yakima Tribe member, "is sort of a light in the sky that may help the fishery and the resource."

A number of tribal leaders reiterated the importance of fishing to the religious, social, and economic structures of the tribes.

The tribes' support for strong fisheries provisions was also endorsed by sometime opponents, the sports fishermen.

As the Council's hearings moved east the issues took on new colors.

"Appropriating great quantities of water for fish runs is not going to be popular within the agricultural population, even those who love fish," warned Tom Hovenden, secretary-manager of the Idaho Cattle Feeders Association, about the possible impact on irrigation.

Nevertheless, Montana Fish, Wildlife and Parks Director Jim Flynn said "this plan has provided us with an excellent opportunity to work with our sister states of Idaho, Oregon and Washington to ensure a better future for all fish and wildlife in the region."

Testimony during the hearings came from scores of people representing a wide range of viewpoints. The testimony included that of a 92-year-old Yakima Tribe member, James Alexander, who recalled for the Council his youth on the river and the plight of the fish over the years, telling the panel, "At one time we could get all kinds of fish, now the thing is just dwindling away."



Photo courtesy Oregon Historical Society

B.P.A. big debt: The federal power agency is behind \$687 million in its payments for the Columbia's dams.

B.P.A. behind on debt payments

The Bonneville Power Administration has come under fire from members of a House subcommittee for falling \$687 million behind on its payments to the federal Treasury. At a hearing in early March, Rep. Tom Bevill, D-Ala., complained that B.P.A. has "the lowest rates (in the country) and the biggest debts." Bevill is chairman of the House Appropriations subcommittee on energy and water development.

"What are you going to do to get your house in order?" Bevill asked B.P.A. Administrator Peter Johnson. Johnson said that B.P.A. plans to increase its rates and reduce costs as much as possible in an attempt to bring the installments on B.P.A.'s \$7.3 billion federal debt up to date by fiscal 1985. B.P.A. has proposed a 73 percent rate increase effective October 1. The increase would jump B.P.A.'s wholesale rates from 11 mills to as much as 19.85 mills per kilowatt-hour, still among the lowest in the nation.

About two-thirds of the debt, Johnson said, reflects falling behind schedule on re-

payment for the cost of financing hydroelectric projects. The remaining third of the debt is interest and operation and maintenance costs that revenues have failed to cover.

Johnson explained that B.P.A.'s revenues are down because electric demand has dropped as a result of the region's lagging economy. He also said that B.P.A.'s contract to pay for three Washington Public Power Supply System nuclear plants is "directly impacting" on B.P.A.'s rates and budget. Escalating construction costs and higher interest rates have increased B.P.A.'s expenses for these projects.

B.P.A. announces billing credits meetings

B.P.A. is holding a series of meetings around the region on its billing credits program. Billing credits are payments to B.P.A. customers for actions — such as conservation or resource development — which reduce B.P.A.'s obligation to acquire energy resources. Following information meetings in March, B.P.A. will hold

public comment forums on April 19 in Boise; and on April 20 in Portland, Seattle, and Missoula. Public comment closes on April 23. For more information, contact B.P.A. at 1-800-452-8429 (in Oregon) or 1-800-547-6048 (outside Oregon).

Council says no to regionalizing WPPSS 4 & 5

The Northwest Power Planning Council adopted an unanimous resolution March 4 not to "regionalize" the terminated Washington Public Power Supply System plants #4 and 5.

The Council, which is charged by Federal law to develop a 20 year master regional energy plan, said that it was not in a position to initiate acquisition of a specific plant prior to having its first plan done, which is due in April of 1983.

The Council was petitioned by 16 public utilities around the Pacific Northwest who are participants in WPPSS projects 4 and 5. The participants wanted the Council and the Bonneville Power Administration to immediately financially underwrite the two plants, even though they had been terminated in January when the troubled power consortium could no longer get financing for the projects, estimated to cost \$12 billion.

"The Power Planning Council is mindful that many WPPSS participants are hopeful that plants 4 and 5 can be regionalized through purchase of their output by B.P.A. under the regional power act," said the Council resolution. "Though the Council appreciates the plight many of these utilities face, having to raise rates for power plants which are not yet completed and may never be finished, the Council is not able to provide the immediate relief sought by these utilities." (See box for complete text of resolution.)

Darren Wertz, a staff mem-

ber of the Clark County Public Utility District in Washington State, told the Council that his commissioners wanted the Council to authorize "regionalizing" the plants because prior Council statements had made it impossible for the plants to proceed.

"The Council had a contributory role in the current situation of projects 4 and 5 through the Council's negative statements on the need and cost-effectiveness of the plants," Wertz said in a letter he read from the three Clark County PUD commissioners. The commissioners blamed the Council for preventing the projects from going ahead. "A neutral Council position would have helped stabilize the projects' financial support and assist in alleviating the shortage of economic robustness and power generation accompanying the demise of projects 4 and 5," said the Clark County letter.

But Council members pointed out there were certain legal restrictions on the Council's acquisition authorities. "There's a dual hurdle," said Chuck Collins, a Washington State member. Collins pointed out that the Council would have to determine first that the plants were needed, and second that they were the cheapest power available.

Council chairman Dan Evans also questioned whether the Council really had a "contributory" role in the



Town Meetings begin: Montana's Mueller addresses group in Kalispell.



termination of WPPSS plants 4 and 5.

"As I remember, it was the vote of the Clark County Public Utility District and Tacoma City Light which sank the mothballing operations," said Evans. "So I hardly think it is an accurate statement to say that the Council was a contributory participant when it was your own PUD who probably torpedoed and Tacoma City Light provided the iceberg for the Titanic to go down."

Clark County PUD, one of the largest participants in the WPPSS 4 and 5 projects, voted in early January to deny funds for a mothballing program, which would have preserved the plants until the Council had developed its plan in April 1983. The refusal of participants, such as Clark County PUD and Tacoma City Light, to go along with the mothballing program eventually forced WPPSS to termi-

nate the plants and abandon them. The Council resolution was adopted unanimously at the March 4 Missoula, Montana meeting.

Council townhall meetings begin

"Do you consider decentralized energy sources?"

"I'm here to ask the Council to insure enough power so that we can have jobs."

"Are you just going to update and revise everybody else's forecasts or are you going to do something different?"

"What will you do to protect the rights of irrigators?"

These are some of the comments expressed by people attending the Northwest Power

Planning Council's first townhall meeting in Kalispell, Montana, on March 23. About 100 people attended the evening meeting, where Montana Council member Gerald Mueller presented an informational slide show and then responded to questions and comments from local residents.

The Kalispell meeting is the first in a series of townhall meetings that the Council is sponsoring in Montana, Idaho, Oregon, and Washington this spring. The two Council members in each state are visiting local communities to inform people about the Council and to invite comments on Northwest energy issues and the Council's role.

The schedule of townhall meetings is included in the calendar on page 2 of this issue. For more information, contact Torian Donohoe at 1-800-547-0134 (in Oregon, call 1-222-5161).

Council resolution on WPPSS 4-5 sponsorship

The Northwest Power Planning Council commends the participants in WPPSS 4 and 5 for taking the steps necessary to bring about a controlled termination of those power plants. Many utilities have put aside short-term interests by approving the termination plan and by making the one-year loans to WPPSS. Their actions, once completed, will prevent deterioration in WPPSS' financial condition and will avert a WPPSS default, which would have significant and dire economic impacts on all Northwesterners.

The Northwest Power Planning Council is mindful that many WPPSS participants are hopeful that plants 4 and 5 can be regionalized through purchase of their output by B.P.A. under the Regional Power Act. Though the Council appreciates the plight many of these utilities face, having to raise rates for power plants which are not yet complete and which may never be finished, the Council is not able to provide the immediate relief sought by these utilities.

The Congress did not contemplate that the Council would

initiate plant acquisition decisions before the plan is complete. The Council may act with respect to specific plants only through the mechanism provided in section 6(c) of the Regional Act. Under that provision, B.P.A. must make the initial determination whether a major resource is needed, cost-effective, and consistent with the priorities and other considerations in the Act. The Council has 60 days to respond to a recommendation by B.P.A. to acquire a resource. If the Council approves the decision or takes no action, the acquisition can go forward. If the Council finds the decision to be inconsistent with the Plan or provisions of the Act, then B.P.A. must seek approval from Congress before acquiring the resource.

The Council is currently working to develop a 20-year forecast of the region's energy needs and an energy plan to meet those needs. The Council's plan will be completed in spring 1983 and will be used pursuant to the Act to guide B.P.A.'s resource acquisition program.

Idaho Falls hydro contract signed

A small hydroelectric project on the Snake River in eastern Idaho represents the first Bonneville Power Administration renewable resource acquisition under the Regional Power Act of 1980.

Six months of negotiation between the City of Idaho Falls and B.P.A. culminated in a six-year contract signed by Idaho Falls Mayor Tom Campbell March 22. Under the agreement, B.P.A. will buy the power generated at the three hydroelectric plants for about \$5 million a year, according to Idaho Falls Electric Division Manager Steve Harrison. On the average, about 175 million kilowatt hours of electricity will be produced by the three bulb turbine plants, Harrison said.

The plants are located within seven miles of each other on the Snake River with one located in Idaho Falls, and the other two plants located outside the city.

Harrison said the agreement was "appealing" because of the financial savings to the city. B.P.A. agreed to pay about three cents per kilowatt hour for the power generated by the turbines. Idaho Falls currently buys about two-thirds of its power from B.P.A. for about 1.2 cents per kilowatt hour, which is B.P.A.'s current wholesale rate.

The first plant of the \$62 million project is expected to begin generating electricity in April with the remaining two plants producing power this summer.

A critical part of the contract with B.P.A. allows the city to withdraw from the agreement after six years provided it gives three years prior notice. This would give the city the option of withdrawing from the agreement if B.P.A.'s rates become higher than the cost at which the power is sold to B.P.A.



"The magic metal:" Tom Payne of Anaconda Aluminum explains the aluminum reduction process to Art Sheldon, a member of the Northwest Power Planning Council's Montana Advisory Council, during an Advisory Council March 23 tour of Anaconda's Columbia Falls plant.

Heavy rains, low use bring NW hydro glut

Because of reduced demand and higher precipitation, the Pacific Northwest currently has a surplus of electric power. B.P.A. is selling as much cheap electricity as it can to Northwest private utilities and to California utilities. But there is still a surplus. Water is being spilled over the Columbia River hydroelectric dams because there is no market for the excess power. The reservoirs also need room for what may be the best spring runoff since 1976.

There are two main reasons for the surplus:

- Demand is 7 or 8 percent below B.P.A. forecasts, the result of the mild winter, the economic recession, and conservation programs.
- Precipitation in the Columbia River basin has been much higher than normal — 171 percent of normal in February — while the snowpack is normal or above normal.

The main source of electricity in the Northwest is still hydroelectric power. Thus the supply of power depends on the weather. In recent drought years, B.P.A. has bought

power from other sources to meet demand. This year, there is more power than the region needs.

The surplus is partly the result of the region's economic recession. The aluminum industry, the major industrial user of electricity in the Northwest, is facing tough times. According to B.P.A. spokesman Bill Murlin, half of the region's 10 aluminum plants have reduced their demand for power. The timber industry, which also uses large amounts of electricity, has severely cut back the number of mills in operation.

PP&L proposes pilot conservation program

A pilot conservation project designed to save as much electricity as possible in a confined geographic area has been proposed to the Bonneville Power Administration by Pacific Power & Light Company.

"The primary goal would be to determine the ultimate level of energy conservation that

could be achieved by applying state-of-the-art methods and cost-effective criteria in a concentrated area," said Glen Spicer, PP&L vice president for conservation and consumer affairs. "We want to test the energy-saving potential by saturating a single community during an initial two-year period and measuring the results."

Pacific Power said it submitted a written proposal to B.P.A. within the framework of conservation sections of the Regional Power Act. If accepted, the conservation program would involve customers of Pacific Power and the Hood River Electric Cooperative in Hood River County and could begin by late spring or early summer.

The program would be limited to electric energy applications in use by residential, commercial and industrial customers. The proposal calls for substantial financial incentives for participating customers.

Measures proposed to be available to eligible residences include:

Home energy audit; insulation of ceilings, floors, walls, water pipes, dehumidifiers and heat exchangers; storm windows; storm doors; caulking and weather-stripping; switchplate gaskets; electric water heater wraps; hot water flow regulators and advanced design shower heads.

Results of the energy audit would determine which items would be applicable in a particular household.

The proposed pilot program also would provide a variety of electricity-saving opportunities for commercial-industrial customers. Comprehensive energy audits would be offered and there would be incentives for installing and monitoring cost-effective conservation measures.

Steve Hickock, B.P.A. assistant administrator for conservation and renewable resources, said that a task group is being formed to evaluate the PP&L proposal and that he will head the group.

Hickok indicated that Bonneville would have an initial response to the proposal soon.

Forecasting... (From page 1)

off-handedly dismissed the whole price response issue as "the so-called theory of elasticity," the economist's phrase for the relationship of price to consumption.

"It wasn't a 'so-called theory,'" says Gibson. "It was demonstrated fact."

The price elasticity debate — a debate which has since evaporated in the heat of rising electric prices — demonstrated something more, however: energy forecasts, no matter how good, are based on assumptions and estimates about an unknown future. Assumptions on whether price matters, and estimates on what that price will be. For regional power planners forecasting has become perhaps one of the most frustrating and troubling of their tasks. Forecasts are fundamental to any planning effort. Forecasts are also fundamentally hobbled by the uncertainties of predicting a world 20 years from now.

And for consumers, often far removed from the economic growth studies and the computer crystal balls, the foibles of forecasting raise a more direct question: What's the cost of being wrong?

As Northwesterners have found out, the cost of being wrong can sometimes run into the billions of dollars.

"The way you forecast depends on how much you stand to lose if you're wrong," explains Gibson. "It costs you more to develop a good econometric model than to get out a ruler and extrapolate."

For years, that's about what regional power planners did. Power was cheap (in "real dollar" terms it was actually getting cheaper) and the cost of being wrong was small. Northwest demand for electricity was growing at the brisk annual clip of seven to eight percent so any surplus was quickly sponged up by growing demand. And if growth didn't take care of it, there was always another utility somewhere willing to buy the surplus. During the economic boom times of the 1950s and 1960s, power planners found "loads could be predicted very accurately using semi-log graph paper and a ruler," says the Public Power Council in its book, "Power Planning Primer." The PPC is the planning coordinator for the region's various public power agencies.

Planners called the graph paper and ruler method "trending." To plan what would happen in the future you would look to see what had happened in the



past, figuring past patterns had been reasonably stable.

"It was like driving a car by only looking in the rearview mirror," says Gerald Mueller, one of Montana's members of the Northwest Power Planning Council. Trending worked fine as long as the road was straight — but a sudden curve could send you careening down the ravine.

The curve came in 1973. The Arab oil embargo took all of the planners' trend lines and shattered them. For years the rules of the forecasting game had been consistent; now they were all changing. "The accuracy of forecasts evaporated," says the PPC's primer. "The cost of construction escalated dramatically, and the rising costs of electricity began to reduce consumption."

"In the era of the 1940s, 50s, 60s and early 70s the economies of scale were such that maintaining low rates translated into more and more power plants," says Tom Eckman, an energy analyst with Mathematical Sciences Northwest.

"That was conventional thinking, but then all of a sudden everything went the other way. It flip-flopped on them. They had been working in an era where the next unit of power cost less and all of a sudden it reversed; the next unit of power cost more.

"When (J.D.) Ross (former Seattle City Light Superintendent and first B.P.A. Administrator) built his first dam it was something like 15 cents per kilowatt," adds Eckman. "That was somewhere in

the 1920s, and the real power cost had been going down ever since then. You had a generation of utility managers and planners who were brought up to think that was dogma. Everything was very calm and consistent."

"Anything before 1973 or 1974 was based on trends," says David Hoff, manager of corporate planning for Puget Sound Power and Light. "And the trend was six, seven, eight percent. After the oil embargo prices started to go crazy."

The oil embargo took the nation's economy on a roller coaster ride that was particularly unsettling for utilities. The doctrine that more and bigger power units were cheaper had been left at the bottom of the ride. And as things climbed, utility planners were finding out that the cost of being wrong could be sky high. Billions could be spent on a power plant once thought needed by your trend line but no longer needed thanks to the new energy realities.

The transition was complicated even more for Northwest utilities. After years of relying on cheap power from the Columbia's dams, the region was shifting to new thermal power facilities, either coal and nuclear plants. Inflation, management problems, and labor disputes sent the cost of the new thermal plants skyward, the cost differences being all the more dramatic because of how incredibly cheap hydro power was.

The soaring cost of new power sent demand plummeting. "We had significantly underestimated that cost," says Puget's Hoff. "In the region, with the WPPSS plants, we were sort of looking at generic things, and all of a sudden we had some plants being built that were becoming tremendously expensive."

Utilities tried to adapt to the changing world. One of the first adaptations was development of an "econometric" forecasting model for the Pacific Northwest Utilities Conference Committee, the umbrella group for public and private utilities and energy-intensive direct service industries. In 1975, PNUCC commissioned Kenneth Anderson of National Economic Research Associates to develop an econometric model. The model was to be a more precise cross-check of PNUCC's earlier forecasting methods, called the Sum of Utilities forecast. The Sum of Utilities forecast was the compilation of forecasts

— ranging widely in the degree of technical sophistication — from the individual PNUCC members. Critics said it was prone to “double counting” of loads for different utilities and risked becoming each utility’s wish list.

Anderson’s model became the Northwest’s first consolidated, computer-generated regional electric forecast. It also provided the region’s utilities with a test of the theory of price elasticity — a factor that’s become increasingly important in regional power projections.

In 1977, the first time PNUCC used the econometric model, the utilities estimated 4.5 percent annual load growth, raising power demands to 24,000 megawatts by 1987, an addition during the 10 year period of another 8,000 megawatts or the equivalent of more than a dozen new nuclear power plants. In 1978, the PNUCC’s forecast slipped to an estimated 4.2 percent annual growth.

In 1979, the PNUCC forecast dropped again, to 3.9 percent. In 1980, it dropped to 3.4 percent annual growth. And last year, the PNUCC forecast dropped to 3.2 percent.

Nevertheless, while the PNUCC’s projections were coming steadily down, they were still running higher than actual demand. Increasingly the PNUCC’s forecasts, despite thousands of dollars spent on elaborate computer models, were coming under criticism as being too high and driving utilities to construction programs for new — expensive — power plants which might not be needed.

“We started changing the models to incorporate conservation, either separately or in conjunction with the price effects so they were more end-use models,” says Hoff, former chairman of the PNUCC’s forecasting committee. The end-use models, pioneered by the Oak Ridge National Laboratory in Tennessee, tried to gauge what would be the specific responses — weatherizing, more efficient appliances, switching from electricity to natural gas — to given sets of conditions.

“The problem with these models is that you need a lot of data, and we just didn’t have it,” explains Hoff. “So we started getting surveys. Almost every one of the changes that came in resulted in lower forecasts; hardly anything would increase it.”

Two recent forecasts show the dramatic

Key forecasting assumptions

Key Assumptions	WPPSS Independent Review ¹	PNUCC ²	BPA ³	NEPP ⁴
Population	1.4	1.8	1.7	1.3
Per Capita Income (Real)	1.9	2.2	1.7	2.6 ⁵
Total Employment	2.1	?	2.1	?
Residential Oil Prices (Real)	3.9	4.4	2.3	1.2 ⁶
Residential Gas Prices (Real)	2.4	4.2	3.2	4.2 ⁶

¹Independent Review of Washington Public Power Supply System Nuclear Projects Numbers 4 and 5, Module 1A: Load Forecasting and Balancing.

²Pacific Northwest Utilities Conference Committee, Econometric Model: Electricity Sales Forecast, July 1981. (Values shown are the mean of the panel forecasts.)

³Bonneville Power Administration Forecasts of Electricity Consumption in the Pacific Northwest, Draft, April 1982.

⁴Energy Futures Northwest, Northwest Energy Policy Project: Executive Summary of the Final Report.

⁵This growth rate is for per capita gross regional product.

⁶The NEPP fuel prices are averaged across all sectors, not just for residential sector.

drops in projected power demands. The Independent Review of WPPSS 4 and 5, commissioned by the Washington legislature, now estimates annual load growth at 1.5 percent. And a forecast released earlier this month by the Bonneville Power Administration pegs it at 1.7 percent.

“We wanted to address a simple fact in projecting our needs,” says Senator Mark Hatfield, Oregon Republican, “to analyze the inventory — what were our needs?”

Forecasting was one of the major tasks Congress wanted to give to an independent regional planning body, says Hatfield, a prime sponsor of the Regional Power Act. When Congress passed the bill it directed the newly created Northwest Power Planning Council to develop a 20-year load forecast independent of the region’s utilities and the Bonneville Power Administration.

“It was no longer to be done by so-called bureaucrats behind closed doors and then given as from Mt. Sinai in tablets of stone,” says Hatfield. “It was to be a composite of many forces in the Northwest. Public forces, private groups, what have you.”

A number of forces in the region are focusing on the benefits and drawbacks of modern forecasting techniques.

“There’s just a whole lot of uncertainty in every forecast,” says Charles Collins, a Washington member of the Northwest Power Planning Council. “If you’re trying to base your decisions on trying to make the forecast more certain you’re playing a losing game.”

“You want to make the forecasts as accurate as you can, but you want to recognize how fundamentally uncertain they remain.”

The fundamental uncertainties center around what goes into the computer forecasting model. What assumptions have you made about the future?

"The problem," says Jack Robertson, respected energy analyst and chairman of the Council's Scientific and Statistical Advisory Committee, "is that there are no facts to the future."

There are four general elements — assumptions — which drive any forecasting model:

- Population — This obviously affects how many consumers there will be. What's the birth rate likely to be? How many people will move in or out of the region?
- Per capita income — What will be people's income level? This will affect the types of housing built, appliances sold and the public's disposable income for electricity.
- Industrial output — What will be the economic health of the region? What kinds of industries will we have? What kind of energy will these industries need, and how energy-intensive will they be?
- Fuel prices — People buy energy similar to the way they buy meat in the market. Is chicken cheaper than steak? Is it cheaper to heat a home with oil? Natural gas? Electricity? Wood? The prices of the various fuels help guide public consumption patterns.

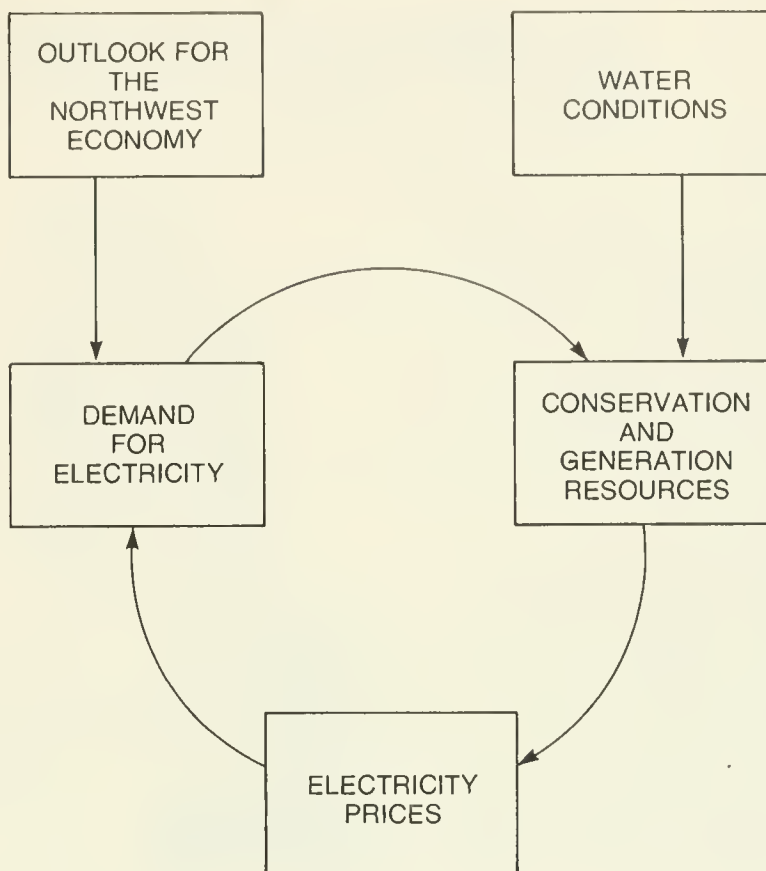
The trouble with any forecast is that these key assumptions are just that — assumptions, educated guesses, about what the future will be.

"We're supposed to predict interest rates for 20 years," comments Collins. "Paul Volcker (Chairman of the Federal Reserve) can't tell you what the money supply is going to be next month, and he's got resources at his disposal we'll never have."

Collins says the region's utilities and power planners have to look at forecasting from new directions, finally coming to grips with the inherent uncertainties of any forecast.

"The wisdom, and I think it was right for a long time, was it's always better to overbuild than underbuild," says Collins. "The newer, and better, observation is that neither one of them is very desirable.

(Continued on next page)



How a forecast works

The modern computerized energy forecast is a collection of many pieces of information designed to give the forecaster a picture of how things might be. It is, as forecasters will tell you, a guess about the future, and necessarily based on certain assumptions.

The forecaster's central job is to try to balance the demand for energy, in this case electricity, with the resources available to produce it.

So how does a forecast work?

A forecaster starts with information about the area's economic outlook, paying particular attention to the regional population and economic changes. What will be the birth rate? How many people will move into or out of the region? What will happen to the Northwest's economy? Will the timber industry rebound? Or will new industries dominate in the Northwest economy over the next 20 years, and what will be those industrial energy needs?

The population and economic information, much of it based upon projections, gives an initial estimate of electricity demand.

Then a forecaster attempts to balance demand with possible energy resources. In the Northwest, because of our dependence on hydroelectric facilities, one must also consider water conditions over the next 20 years, including fisheries impacts. A prolonged drought can dramatically cut water available to produce electricity, requiring additional resources to make up for lost power capability of the hydro system.

Once the forecast provides a picture of the resources required to meet the estimated demand, the forecast estimates the effects on retail rates. The electrical price elasticity is then fed back into the computer to adjust demand in light of the estimated price of future power.

These comparisons between the demand for electricity, the resources to meet the demand, and the price of those resources and how it affects the original demand finally gives a balanced demand picture of not only what the public's need for electrical power might be but how that need will be shaped by the cost of meeting it.

'The wisdom was it's always better to overbuild than underbuild. The newer, and better, observation is that neither one of them is very desirable.' Chuck Collins

Somehow we've got to get over that question."

Instead, Collins says, planners should start focusing on how to deal with a range, or band, of possible growth scenarios.

"We ought to start looking at smaller resources, or at ways of incrementalizing large ones," Collins advocates. "If we build a nuclear plant, we ought to have a sales option contract so if we build it and don't need it we've got a market.

"Basically, we've got to be able to move around that band on very short notice.

"One of the beguiling things about a point forecast, like 2.5 percent for the next 20 years, is that if you're right and you match your resources to it, you have the least cost proposition. The problem is, the expense of being inaccurate is extremely high. If you're short two nuclear plants, the cost to the economy is pretty expensive. If you're surplus two plants it's an expense to the economy — a \$12 billion capital investment."

To counter the high-low whipsaw effect, Collins suggests developing a wide variety of resource options — some small with short development times; others larger, "banked" by going through initial siting and licensing procedures and then placed in an account until it's clear

whether they would be needed. Large facilities would be over the tall, pre-construction hurdle and be able to be completed faster, says Collins.

Within this energy bank account, Collins says, the resources would be stacked according to their costs and the speed by which they could be brought on line.

As example, Collins says one option might be an accelerated, no-cost conservation program that could be immediately implemented if demand was running higher than anticipated.

A poor option, Collins says, would be an unsited nuclear plant because of the uncertainty that the plant could be ready in time. "There's just no one who can say that in 10 years if I haven't even started the siting process that I can have a nuclear plant available. There are just too many pitfalls," Collins adds.

While accepting the uncertain nature of any forecast, Collins says power planners must demand greater certainty that various resource options will come on line on time and on cost.

"Certainty about your future doesn't result from the accuracy of your forecast," says Collins. "Certainty about your future results from your options and their flexibility."

Council discussion paper available

"The Path Along the Ridge: Regional Planning in the Face of Uncertainty" is the title of a discussion paper issued by the Northwest Power Planning Council. The paper outlines an approach to energy planning that focuses on flexibility and management of risk, suggesting that an uncertain energy situation can best be managed on a regional basis.

The energy demand forecast, according to the paper, should not aim at a single point, but should attempt to carefully define the high and low boundaries of forecasted demand. Resources should be planned for the entire range of demand.

The paper is intended to provoke discussion and criticism as a means to developing a practical planning approach.

Copies of the paper may be obtained by writing or calling the Northwest Power Planning Council, 700 S.W. Taylor, Suite 200, Portland, Oregon 97205. Phone: 1-800-547-0134 (regionwide, except Oregon) or (503) 222-5161.

Council's forecasters

The Northwest Power Planning Council has hired three consultants to aid in development of a long range forecast, as required under the Pacific Northwest Power Act.

The consultants will help develop various computer forecasting models, which will then be used by the Council and its staff to do the actual forecasting.

The Council's prime forecasting contractor is Charles River Associates of Boston. CRA had previously done work with the Northwest Energy Policy Project and for the Independent Review of WPPSS 4 and 5 commissioned by the Washington State Legislature. The Charles River model is a combination econometric and end-use

model and focuses on the residential and industrial sectors. The Charles River contract is for \$200,000.

In the commercial sector, the Council selected Jerry Jackson and Associates of Marietta, Georgia. Jackson is the designer of the original Oak Ridge National Laboratory's commercial model and has done extensive work in commercial sector forecasting. The Jackson commercial model will be incorporated with the other CRA models. The Jackson contract is for \$75,000.

The Council's third forecaster is Cambridge Systematics, Inc. of Berkeley, California. Cambridge Systematics is considered a pioneering firm in residential forecasting and is developing a special model

for the Council's use. The CSI model is expected to be delivered to the Council later this year and will be incorporated in subsequent forecasting efforts. The Cambridge Systematics contract is for \$75,000.

In each case, the contractor's computer model will be delivered to the Council and the Council will do the actual forecasting, developing a series of inputs and running them through the particular computer models. The Council's forecast will be ready by fall 1982. The Council's forecast will become the primary forecast for planning and acquisition of resources by the Bonneville Power Administration.

Forecasts, forecasts everywhere

The Northwest has forecasting fever.

These days it seems like everyone is doing an electric energy forecast of the Northwest's power needs between now and the year 2000. To date, forecasts have come from groups including a state-commissioned independent effort in Washington, an effort by a conservation group, and the latest by the Bonneville Power Administration.

B.P.A., the federal power marketer in Washington, Oregon, Idaho, and western Montana, estimates that the annual electrical load growth will run at 1.7 percent. This would take the region's 1980 loads of 16,737 average megawatts up to 23,333 average megawatts by 2000.

While B.P.A. says the 1.7 percent growth rate is the most likely to happen, it says increased demand could range anywhere from low side 0.8 percent per year to a high load growth projection of 2.5 percent. The federal agency says there is a 40 percent chance that actual load will fall between the average 1.7 figure and the 2.5 percent upper level.

For consumers, B.P.A. says the biggest jolt in electrical rate increases will be felt between now and 1984, with the real price of electricity, adjusted for inflation, going up roughly 40 percent between 1980 and 1984. From 1984 through 2000, B.P.A. expects its wholesale price to be "relatively constant."

In each of B.P.A.'s load growth scenarios, the agency figures that the terminated Washington Public Power Supply System Plants No. 4 and 5 will not be completed.

For resources, the federal agency has only included conservation programs already budgeted by B.P.A. and unnamed future power resources, anticipated to be built in 200 megawatt "lumps" at costs somewhere between 4 and 5 cents per kilowatt in 1980 adjusted dollars.

The B.P.A. forecast notes one of the key components in figuring demand is the price of electricity paid by consumers, and "with every reliable indicator pointing toward higher costs of electricity, one can expect consumers to respond by switching fuels and improving the thermal integrity of homes or buildings, devising more efficient industrial process or altering the pattern of use."

The B.P.A. forecast comes on the heels of two other recent forecasts which also show a dramatic reduction in anticipated electrical load growth in the Pacific Northwest.

EXECUTIVE SUMMARY

Bonneville Power
Administration
Forecasts of
Electricity Consumption



New numbers: B.P.A. boss Peter Johnson says his agency's forecast indicates the region might have a "short-term" surplus.

A study commissioned last year by the Washington State Legislature and carried out by the Washington Energy Research Center estimates load growth will run at an average of 1.5 percent annually. At that demand level, given moderate conservation efforts, the equivalent power from WPPSS Plants 4 and 5 would not be

B.P.A. expects higher, even dramatically increasing, electricity rates to encourage conservation.

needed until 1995, says the joint study by Washington State University and the University of Washington.

In addition to the forecast, the WPPSS Independent Review makes a number of recommendations regarding the WPPSS 4 and 5 projects and utility practices in general.

The Hinman report urges the WPPSS 4 and 5 participants to avoid actually dismantling the facilities, saying the region should consider completing the plants for possible sale to out-of-region utilities, such as in Southern California, or eventually completing them instead of starting either new nuclear or coal-fired plants.

The study also urges state and local governments and local utilities to adopt more aggressive cost-effective conservation measures, to develop small-scale hydro facilities and other arrangements, to give the region greater flexibility in low water periods. The Hinman report also urges utilities and public agencies to "adjust utility policies, plans and construction programs to the prospect of much slower growth and electricity sales than they have been expecting."

Another forecast and proposed model plan echos many of the same conclusions of the Hinman report.

The Natural Resources Defense Council, a San Francisco-based environmental group, has prepared a model forecast and plan for the Northwest Conservation Act Coalition, which calls for the indefinite deferral of all but three of the large-scale coal or nuclear plants under construction in the Northwest.

Under the NRDC's high demand scenario, the region would only complete construction of Valmy Unit 2 in Nevada, Coal Strip Unit 3 in Montana, and WPPSS Unit 2 in Washington, combined with "vigorous" conservation, to meet load growth between now and 2000.

And a forecast for Oregon by the state's Department of Energy predicts annual load growth at 2.1 percent.

In addition to these forecasts, the long-standing sum of the utilities forecast by the Pacific Northwest Utilities Conference Committee will be published sometime this month. While the PNUCC's own forecasts have been dropping in recent years, the utility group says it questions whether the new wave of forecasts may be too low.



Photo courtesy Oregon Historical Society



Photo courtesy Oregon Historical Society



Photo courtesy Bonneville Power Administration

Roll On, Columbia

Once thought to be an inexhaustible resource, the Columbia is again at the center of regional energy controversy.

Since the turn of the century, the Pacific Northwest's history has been inextricably tied to development of the Columbia River. The river has given the region what one author called a "hydro heritage," and this heritage has colored every fiber in the social, political and economic tapestry of the Northwest.

Once again, the region's attention is focusing on the Columbia as we grapple with how to best meet our future electrical energy needs. The road to here is a fascinating history of not only this region but of this nation. And the road from here holds the promise of shaping the Northwest for the decades to come and, perhaps, providing a model for the rest of the nation to follow.

The Columbia had long been considered a resource untapped. As early as the late 1800s, talk began over developing the river, which begins in the Canadian Rockies and winds 1,200 miles through Washington and Oregon on its way to the Pacific. Boat operators sought ways of navigating the great Columbia Gorge just east of Portland in order to make the river a highway for inland commerce. Farmers, faced with nature's uncertainties and too many droughts, sought to use the river for irrigation to turn the dusty, semi-arid high plains of the Northwest into a fertile, green farmbelt.

And as these players wrangled over the river's fate, yet another group emerged.

The 1920s had become marked by numerous, sometimes bitter battles over who would control local electric companies, and perhaps nowhere else in the United States was this battle more passionately fought than in the Pacific Northwest. A group surfaced in the Northwest advocating public ownership of utilities. Branded by some as "socialist," they skirmished in local communities and state legislatures, rebuffed more times than not. Finally, in 1930, they put a measure on the state ballots in Washington and Oregon that would allow the creation of public utility districts, or people's utility districts as they came to be called in Oregon. The measure won, in part thanks to the effort of people like Homer T. Bone, a young man who would later figure prominently in the region's future.

Still, the ballot measures didn't provide the power — so public power advocates looked to the Columbia, its steady downhill course ideal for hydroelectric projects. But the dog days of the Depression and the Hoover Administration's hands-off policy for public works projects gave little chance that the public power dreams would materialize.

That all changed with the 1932 elections. Franklin D. Roosevelt swept into office, bringing with him scores of new Democrats, including a new U.S. Senator, Homer T. Bone. F.D.R. had promised to

put people back to work, and two Northwest senators wasted no time in taking Roosevelt up on his word. Charles McNary of Oregon wanted a dam on the lower Columbia for upriver navigation. C. C. Dill of Washington wanted one in the north-central portion of his state for irrigation. It would cost \$31 million for McNary's dam at Bonneville and \$63 million for Dill's Grand Coulee Dam.

But F.D.R. saw use for the dams beyond simply navigation and irrigation. The President was keenly aware of the boom-bust economic roller coaster the region's economy rode upon. Absent any substantial industrial base, the Northwest's economy was at best seasonal and at worst highly sensitive to the slightest jarring from economic forces outside the region. From his years as New York governor, Roosevelt knew the potential for hydroelectric power, and the Columbia River seemed just the spot for such development. The dams, beyond navigation and irrigation, could bring electricity to city and farm alike, and provide the energy for industry — industry that could finally take the region off the economic roller coaster.

By the close of 1933 — a year in which Congress passed scores of sweeping New Deal initiatives — Bonneville and Grand Coulee Dams were approved.

But that created new problems. Critics said it was the height of foolishness to build such massive power plants in such a

sparsely populated, remote corner of the nation. The Northwest would never be able to use all of the power, they said.

While workers poured the first concrete, Congress debated what to do. One notion was modeled after the Tennessee Valley Authority, called the Columbia Valley Authority. Private utilities balked. Northwest lawmakers searched for a solution. Finally, in 1937, then-Senator Bone came up with a compromise. Bone proposed creating an entirely separate federal agency that would sell power from the Columbia's dams but would not actually construct and operate these facilities.

On August 20, 1937, the Bonneville Power Administration was born. B.P.A. would string thousands of miles of high-voltage transmission lines through four Northwest states (Washington, Oregon, Idaho, and Montana) and sell power to any buyer. Within the next year the power turbines at Bonneville Dam began spinning, and within another year B.P.A. signed a contract to directly provide power to an aluminum smelter being built by the Aluminum Company of America (ALCOA). The ALCOA contract became a benchmark for the region, as B.P.A. would sign several more energy-intensive industrial customers to long-term contracts. The accords were amicable enough: B.P.A., loaded with power, found willing buyers to help repay federal loans used to build the dams; the industries found a stable source of inexpensive power vital to their manufacturing, and they provided the industrial base on which the region could prosper.

But B.P.A. still had power to sell so the agency, rooted in the public power movement, hired two men to roam the Northwest and convince people in small, outlying communities to set up their own public utility district or consumer cooperative. One was a former Congregational minister; the other was a guitar picker. The latter was Woody Guthrie.

The next two decades were busy times for B.P.A. Grand Coulee had just gone into operation when the Japanese attacked Pearl Harbor. America was at war again, in need of an arsenal and aluminum to build that arsenal. The Columbia River System would make its contribution to the war effort. In this period, the Corps of Engineers and the Bureau of Reclamation, the two prime dam builders on the river, would start additional projects up and down the Columbia. B.P.A., meanwhile, laid an elaborate network of transmission power lines that laced the region together like a high-top shoe.

It was a heady time in the Pacific Northwest. The region was booming, and J. D. Ross, the first B.P.A. boss, boasted that the Columbia was "an oil well that would never run dry and a coal seam that



Photo courtesy Bonneville Power Administration



Photo courtesy Bonneville Power Administration

One man, one dam that changed the region: Bonneville Dam, east of Portland, was the first federal dam on the Columbia. J.D. Ross, first B.P.A. Administrator, described the river as "a coal seam that would never thin."

would never thin out." Power planners would find there was even a limit to the mighty Columbia.

The war years saw another use for the river, a use that carried both global and regional impacts. In 1942, scientists working on the super-secret Manhattan Project discovered a way of splitting atoms to create a potential weapon of unrivaled destructive force. However, they needed an isolated spot where they could build a production reactor. They settled on a sagebrush-dotted site in south-central Washington, about where the Columbia begins to curve westward to the Pacific: the Hanford Works. By 1945, the Hanford reactors had produced enough plutonium to make the United States the first member in the world's most exclusive club.

Just as the dams had marked one turning point, the federal Hanford project would mark another. The Pacific Northwest had crossed the threshold of thermal power generation—a threshold that other regions, not blessed with a Columbia River, had already hurdled. Hydroelectric power had many advantages (it was clean, the "fuel" was free); it also had its disadvantages (the free "fuel," the snowpack in the Cascades, was undependable, and the dams played havoc with migrating fish).

By the close of the 1940s, utility planners were talking about augmenting the region's hydroelectric power with other forms of generation.

In 1956, first-term Senator Henry M. Jackson, a member of the powerful Joint Committee on Atomic Energy, proposed building a ninth reactor at Hanford called the New Production Reactor, or the N-Reactor. The reactor could serve both the military and civilian sectors, Jackson said, by producing plutonium needed for weapons and steam needed for electricity. But some were fearful that Jackson, a long-time public power supporter, was trying to create an Atomic Age T.V.A. to sell federally-generated power to scores of new public utilities. Jackson's proposal stalled, but it was far from dead.

Instead, backers turned to the State of Washington. In 1957, then-Governor Albert D. Rosellini signed legislation creating the Washington Public Power Supply System. WPPSS was a consortium of about 16 public utilities, set up to overcome financing obstacles that prevented the myriad of small utilities from building centralized, expensive power plants of their own. WPPSS would be a municipal bonding corporation, pooling the utilities' financial resources to underwrite construction of new facilities. WPPSS' first

project was a small dam in Lewis County, but the consortium wasted little time getting involved in a project far larger, the N-Reactor.

To allay fears of private utilities, Jackson, a master at the art of legislative balancing, offered a compromise: public and private utilities would share the output of the N-Reactor. That cooled the old public -vs.- private power embers, and by fall 1963, President John F. Kennedy was speaking before a crowd of 40,000 gathered for the groundbreaking of the N-Reactor.

Three years later, the N-Reactor's power unit was operating and WPPSS, a mishmash of utilities ranging from large and technically sophisticated to small rural utilities that served as little more than billing addresses, was in the power business — in a very big way.

The N-Reactor changed more than simply how the Northwest generated its electricity; it set in motion forces still tugging on the region's social, political and economic fabric. By the time the first kilowatt came from the N-Reactor, all of the Columbia's economically feasible dam-sites had been developed. The region was getting 80 percent of its electricity from dams, and it was the cheapest electricity in the nation. So cheap, in fact, that Northwest-ers used twice the national per capita average of electrical power. Power so cheap it cost more to conserve it than to use it. Coupled with the low price, people were flocking westward. From 1950 to 1970, the region's population grew 35 percent. The Northwest was power hungry, and well-fed thanks to its cheap diet of hydro kilowatts.

By the late 1960s, power planners began charting the roadmap to take the region into the 1990s. It was called the

Hydro-Thermal Program, and it envisioned construction of an additional 21,400 megawatts by 1990, enough power for 21 new Seattles, and a doubling of power available from existing hydro facilities. To meet this enormous expansion, planners figured on building two coal plants and 20 nuclear plants in this land of hydro. Power from these facilities, utilities said, would be nearly as cheap as the hydro. Perhaps too cheap to meter.

The Hydro-Thermal Program was an extension of a variety of things already in place in the Northwest. Thanks to the Columbia's dams and B.P.A., the region already had a highly integrated electrical power system, one piece interlocked with

*'The thing that made
the region prosper
— cheap hydro —
threatened to pitch the
region into combat.'*

another, publicly-generated and privately-generated power moving on the same transmission lines. Private utilities bought surplus power from B.P.A. that wasn't needed by the publics. Everyone was tied together by a common regional power grid.

The Hydro-Thermal Program called for sweeping cooperation between the once-warring public and private utilities, with B.P.A., with its web of transmission lines, acting as the coordinator. The program would bring needed coordination to the next phase of power generation in the Pacific Northwest, planners said. Coordination would allow greater efficiency of scale. Large thermal plants, such as coal or

nuclear, could be built and operated more efficiently if there was a broader base of participants sharing in the financing and use of the plants. "Bigger is better" was a common argument in the utility community in the late 1960s.

A group of public and private utilities in Oregon announced plans to build a nuclear plant on the Columbia, about 40 miles northwest of Portland. And before long, WPPSS announced plans for five nuclear plants, totaling \$4.1 billion. The Hydro-Thermal Program — a program which would shift the region from a hydro-dominated power system to a thermal/hydro mix — was on its way.

For members of the Supply System, as WPPSS likes to be called, the Hydro-Thermal Program offered the chance to become full-fledged, full-service members of the utility community instead of just retailers for B.P.A.'s power. And underlying the decision to build five plants all at once were a number of other assumptions. The WPPSS participants figured the cost of the power from the plants would be cheap — nearly as cheap as hydro and perhaps even too cheap to meter. In addition, forecasts showed the region's thirst for electricity running at a seemingly unquenchable 7 percent per year growth rate. Further, even if all of the power could not be used immediately in the Northwest, there were always the power-hungry Californians looking for power to offset their expensive oil-fired electricity.

But the hopes of becoming the region's new mega-utility became quickly mired. Labor disputes and Nuclear Regulatory Commission-ordered design changes set back mid-70s completion dates. Years of double-digit inflation swelled costs. And as time passed and costs ballooned, a more serious problem came to the front. By the very fractured nature of the consortium, its management was precariously weak. Construction at some of the plants caused the N.R.C. to levy stiff fines and demanded sweeping documentation that what work was done was done right. And the hopes of using the same financing mechanism that underwrote the first three plants was abruptly pulled from under WPPSS when, in 1973, the Treasury Department and the Internal Revenue Service ruled that the public utilities couldn't use tax-exempt municipal bonds if B.P.A. was going to acquire more than 25 percent of the plants' power capability.

Against this backdrop of increasing costs, labor strife, and delays came a changing public mood and a rising tide of opposition to nuclear power. As utilities pushed ahead with the Hydro-Thermal Program, opposition cropped up like a bad case of crab grass. Yet, while the Hydro-Thermal Program was becoming hopelessly ensnarled in dollar-consuming



*'The WPPSS participants figured
the power would be cheap, and forecasts showed
the region's thirst for power running at a seemingly
unquenchable 7 percent per year growth rate.'*

delays and regulatory changes, one thing seemed to arrive on time — the shortage. A low-water year in 1973 had underscored one of the pitfalls of a hydro system: the fuel — the water — was free; the supply of it, however, was something less than certain.

The crunch seemed clear. In 1973, B.P.A. cut off all but seasonal surplus sales to private utilities. In 1976, the federal power marketing agency issued a legal Notice of Insufficiency, telling its public utility and industrial customers that there were no promises of meeting future load growth when their contracts came up for renewal in the 1980s.

J.D. Ross' prophecy was proving painfully false. The Columbia wasn't a coal seam that never thinned. Complicating the forecasted shortage was the question of how to allocate the cheap federal hydro. The power was too cheap for any utility to turn its back on and, as the private utilities were finding out, the cost of any new power plant was financially staggering when compared to dams built in the 30s, 40s, 50s and 60s. As the private utilities, weaned from B.P.A., built new plants their rates soared, creating a growing disparity between consumers served by private utilities and public utilities. This was perhaps nowhere more graphic than between ratepayers of private Portland (Oregon) General Electric and those just across the Columbia in public power Clark County. PGE customers were paying double the rate of public utility customers. Each night atop a warehouse on the north bank of the Columbia, as a not-so-gentle reminder of the price difference, glowed a red sign reading: "PUBLIC POWER." The growing disparity spurred Oregon to pass a law establishing a

state-wide power authority for residential and rural consumers that would make a bid for a slice of B.P.A.'s finite pie.

The coming clash, one observer surmised, had all the makings of a regional civil war. It would create enough lawsuits to employ an army of attorneys but do little to solve the more fundamental problem of where we were to go from here. It was a Catch-22: The very thing that made the region prosper — cheap, seemingly abundant hydro power — was now threatening to pitch the region into fierce combat.

To avoid the courtroom, B.P.A., the utilities, and the energy-intensive industries headed for Congress and the anteroom of Senator Jackson, long the congressional steward over the region's energy development. After several false starts amid increasing controversy over nuclear plants, Jackson finally stitched together a compromise in summer 1979, steering it through his Senate Energy and Natural Resources Committee and through the Senate on a voice vote.

The bill attempted to deal with a number of problems swirling around regional energy. To meet projected shortages, the legislation allowed B.P.A. to financially underwrite new power resources (including conservation efforts) by public and private utilities. It addressed concerns about public participation in energy planning and the various states' concerns over Bonneville by setting up a five-member council with the Administrator as a veto packing member. It attempted to ease the private-public utility rate disparity problems by equalizing wholesale power costs between the two, with the energy-intensive industries pick-

ing up the difference. For those industries and public utilities there were provisions allowing B.P.A. to renew their long-term power supply contracts. And to meet all of Bonneville's new obligations, the bill set up a stair step priority system for deciding what kind of power the region would develop into the Year 2000 — giving highest priority to developing conservation, then renewable resources, and finally conventional power plants, whether coal or nuclear.

Still, a number of environmentalists blasted the bill, saying it did not firmly shut the door on future WPPSSs and paid only lip service to conservation. This was compounded by qualms from some public utilities who, while hoping for help with the WPPSS projects, were nevertheless fearful they might be losing some of their historical claim to cheap federal hydro.

The duty to quell the environmentalists and assuage the public utilities fell on freshman Democrat, Al Swift of Washington. Swift shepherded the bill through the House, beefing up the conservation provisions, allaying the public utilities' fears, and strengthening the council by removing the B.P.A. Administrator, making the Council independent and placing it on equal footing with the federal agency. In the closing days of the 96th Congress, the House approved the Swift version of the bill and sent it to the Senate where it was adopted without amendment.

On December 5, 1980, in the closing weeks of his presidency, Jimmy Carter, signed into law Public Law 96-501, the Pacific Northwest Electric Power Planning and Conservation Act.

For the residents of the Northwest, it marked the beginning of a new era.

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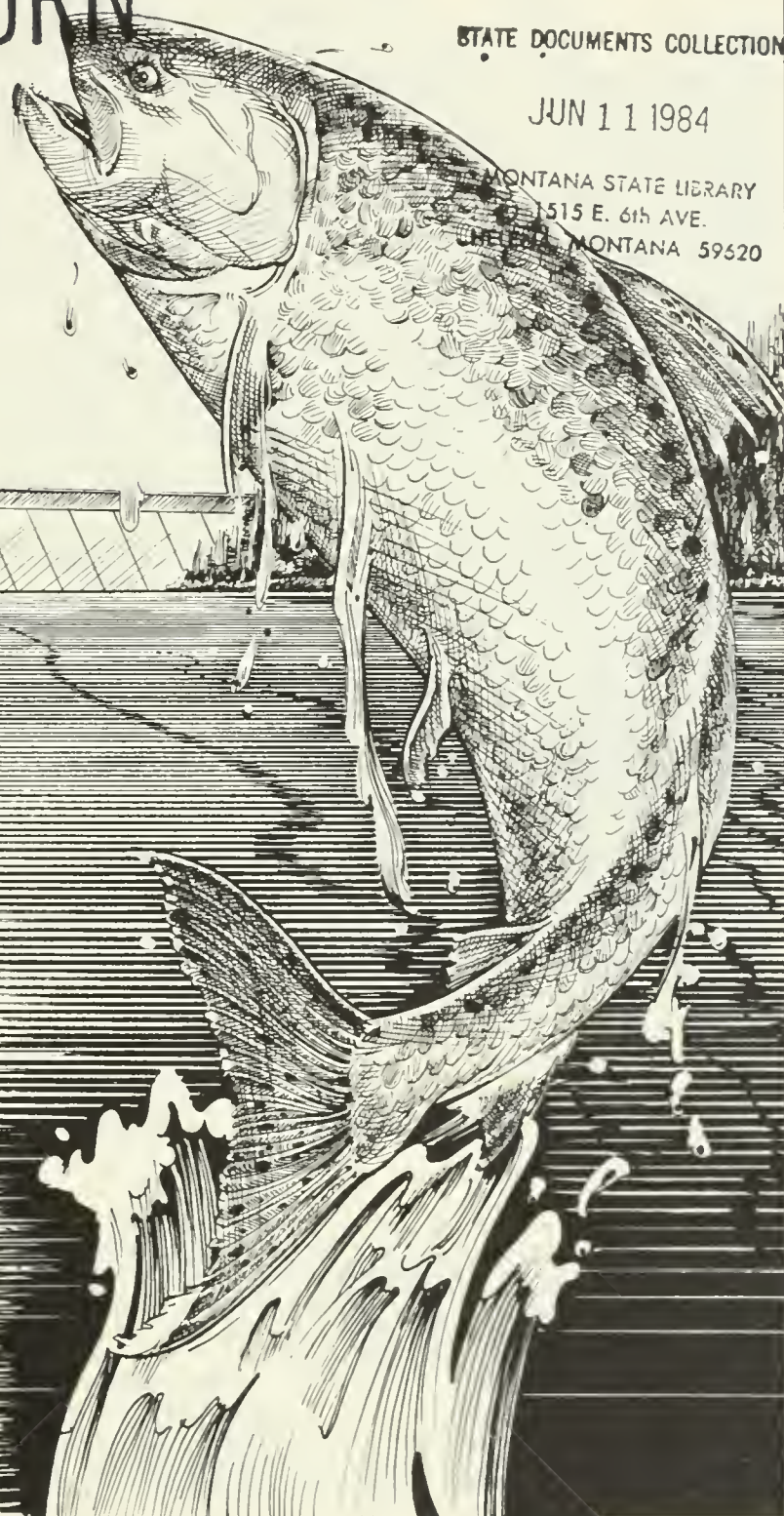
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It is not the Committee's intention to make fish and wildlife superior to power or other recognized needs. But it is the intention of the Committee to treat fish and wildlife as a co-equal partner with other uses in the management and operation of hydro projects in this region.

— House Committee on Interstate and Foreign Commerce
96th Congress, May 15, 1980.

When Congress passed the Northwest Power Act, it did something more than simply set up a new means to deal with the region's energy future. It also directed the Northwest Power Planning

(Please turn to page 10)



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NOTICES

Council seeks views on forecast assumptions

What will the regional economy look like in the future? How many people will live in the Pacific Northwest? What will be the major industries?

The Northwest Power Planning Council is seeking public comment on the assumptions it will use to develop its economic and demographic forecast and the energy demand forecast that will follow. The Council is hoping to gather a variety of perspectives on the region's future, and is interested in the participation of the region's industries, irrigators, population workers, and others with views on the future of the region.

A staff issue paper is available that outlines major issues in the economic and demographic forecast, such as changes in technology and productivity of industries, housing choices, income, fuel prices, and irrigated acres.

Responses to the issue paper will be used in developing draft input assumptions. The Council will request written comments in July and oral comments at its August 4 meeting on the draft assumptions. The Council will adopt forecast input assumptions at its August 18 meeting.

Anyone wishing to comment on the forecast assumptions should contact Annette Frahm at the Council's central office.

Comments sought on meeting rules

The Northwest Power Planning Council is seeking public comment on its proposed procedures for open meetings, notice of meetings, and closed meetings under the Government in the Sunshine Act. The proposed procedures have been published in the Federal Register; they may also be requested from Jim Fell, General Counsel, at the Council's central office. The comment period will end June 23.

CALENDAR

June 1, BPA meeting: Impact Aid to Local Governments, 7 p.m., BPA Auditorium, 1002 N.E. Holladay, Portland.

June 2-3, Council Meeting, 8:30 a.m., Holiday Inn Boise Airport, 3300 Vista Avenue, Boise.

June 5, Passive Solar Design: Why home weatherization comes before solar, 7 p.m., Tacoma Public Utilities Auditorium, S. 35th Street and Union Avenue, Tacoma.

June 7, BPA Conservation Public Workshop, 9 a.m., Burley Inn, 800 N. Overland, Burley, Idaho.

June 8, Home Buyers Guide to Energy Conservation (a series); June 8: Buying an older home; June 10: Heat loss theory and calculations; June 15: Insulate your home; 7 p.m., Greenwood Public Library, Seattle.

June 8, BPA Conservation Public Workshop, 9 a.m., Holiday Inn, 1609 W. Broadway, Missoula.

June 9, BPA Conservation Public Workshop, 9 a.m., Sheraton Inn, North 322, Spokane.

June 10, BPA Conservation Public Workshop, BPA Building, West 101 Poplar, Walla Walla, Washington.

June 11, BPA Conservation Public Workshop, 9 a.m., Seattle Center, Mercer Forum 3 & 4, Seattle.

June 14, Forecasting Subcommittee Meeting (SSAC), 9:00 a.m., Council Offices, Portland.

June 14, BPA Conservation Public Workshop, 9 a.m., Lloyd Center Auditorium, Portland.

June 15, Executive Committee, (SSAC), 1:30 p.m., Council Offices, Portland.

June 16-17, Council Meeting, 8:30 a.m., Council Offices, Portland.

June 17-20, Options Northwest: Local Responses to Global Challenges, The Evergreen State College, Olympia, Washington.

June 18, Reserves and Reliability Subcommittee Meeting (SSAC), 9:30 a.m., Council Offices, Portland.

June 18, Fish and Wildlife Subcommittee Meeting (SSAC), 8:30 a.m., Council Offices, Portland.

I N T H E N E W S

New troubles for WPPSS

Editor's note: The article below was written prior to a May 29 decision of the WPPSS Executive Board to possibly resume construction of Plant 1 in early 1983.

The Washington Public Power Supply System was handed a new script of troubles this past month as yet another act in the Northwest's power drama unfolded.

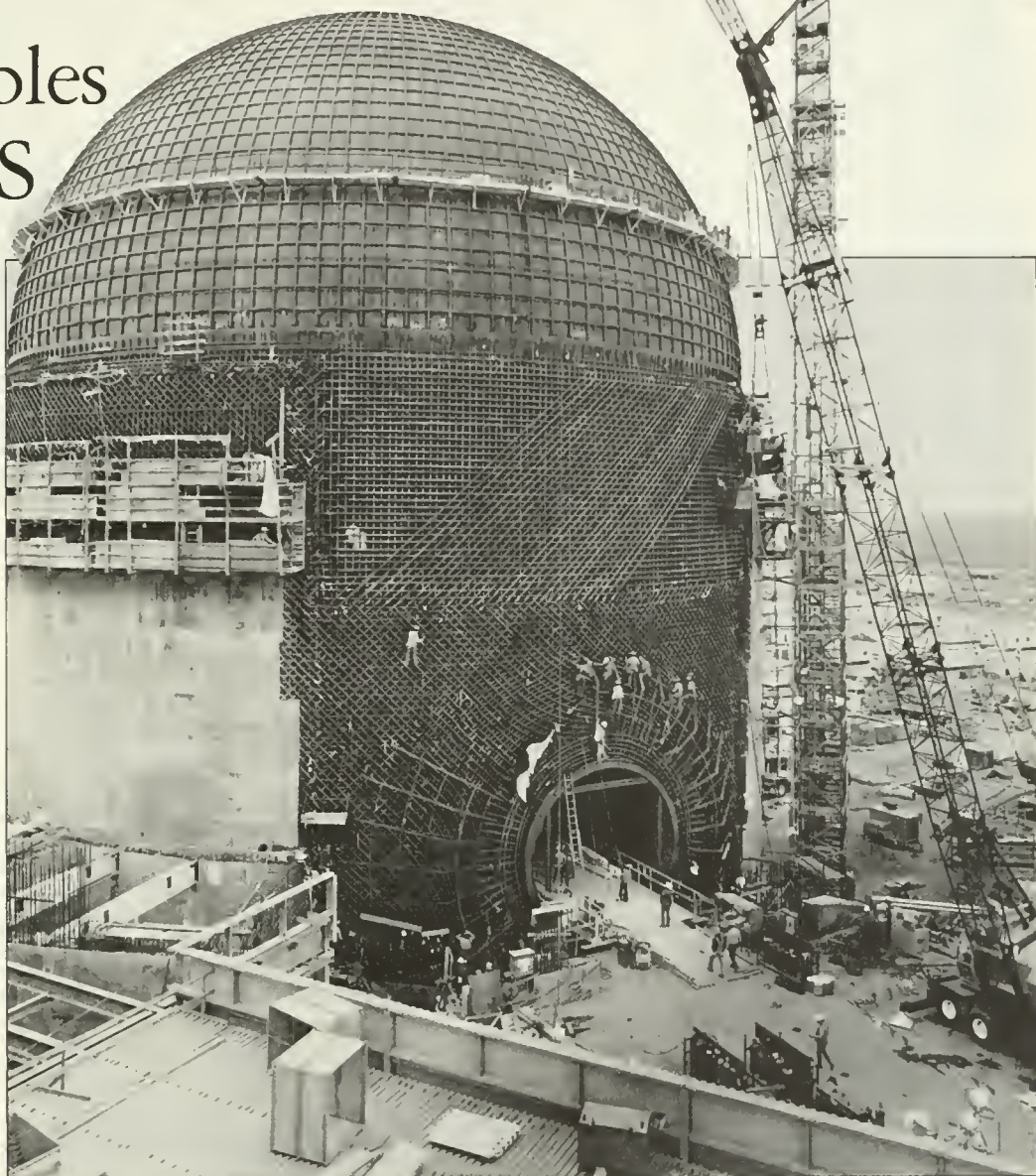
Winter had seen the beleaguered consortium finally place two of its five nuclear power projects in a deep — perhaps permanent — freeze, with Supply System officials turning their hopes to finishing the remaining plants as quickly as possible.

But even that was not to be.

Spring brought a major script revision. An energy forecast by the Bonneville Power Administration — which some had once feared would be used to justify "regionalizing" the costs of the last two, \$12 billion WPPSS plants — showed that the power from the remaining plants might not be needed as soon as thought.

While the BPA forecast received most attention, the Supply System's major hurdle was financial. Dropping forecasts, combined with the post-July impacts of Washington's Initiative 394, had made the municipal bond market, WPPSS' financial lifeline, nervous at best.

To raise enough money before the July 1-394 deadline to keep the three projects going until the first available vote on a new bond sale would have required more than \$1 billion, WPPSS and BPA officials estimated. And BPA Administrator Peter Johnson told the Supply Sys-



Pre-mothball: Some of the 6,000 workers who were laboring on WPPSS Plant 1 have already received their pink slips.

tem board that Wall Street had a one-word answer to a bond sale that large: "No."

WPPSS' best hope, Johnson said, was a \$650 million bond offer — an amount far short of the capital needed to keep building all of the plants.

Johnson, in mid-April, told the Supply System Board they had basically two options: They could get enough money for work on Plant 2 and one other, delaying the third; or they could funnel all of the

money into completing Plant 2, 90 percent finished, and delay Plants 1 and 3.

Johnson's recommendation: Fund Plant 2, which could be running by early 1984, finance the WPPSS share of Plant 3, which is jointly held with some Northwest private utilities and is 50 percent complete, and mothball Plant 1 for up to five years.

The BPA chief's proposal, which came after numerous discussions with federal, re-

gional, state, and utility officials, sent a Mount St. Helens-like rumble through the region.

The Northwest Conservation Act Coalition, even prior to the recommendation, urged mothballing both WPPSS 1 and 3. Washington State Senator King Lysen, a frequent WPPSS critic, said BPA proposed the wrong plant; Plant 3 near Satsop in western Washington should have been mothballed instead of Plant 1



Taking to the streets: Tri-Cities residents organized protests in hopes of saving WPPSS Plant 1.

on eastern Washington's Hanford Reservation. Robert Olsen, the newest WPPSS board member from Mason County, said Plant 3 "is 10 miles from where I live, and it is disliked and not wanted" by western Washington ratepayers.

Olsen's comments pointed to one of the odd coalitions to coalesced from the mothballing drama: anti-nuclear activists from western Washington combined with pro-nuclear construction workers and residents of the Tri-Cities, the trio of towns that have grown up around the Hanford Reservation. For once, they had a common goal — if you were going to build a plant, build it in eastern Washington.

As the WPPSS board met in their Tri-Cities headquarters to take up the BPA recommendation, more than 10,000 residents gathered outside, carrying signs saying "Save Our Town" and "Save #1." Hundreds of letters from the Tri-Cities came to the Northwest Power Planning Council, asking Chairman Dan Evans to somehow intercede and "save" Plant 1. But Evans, in an open letter to The Tri-Cities Herald, said the Council's energy planning authority simply didn't stretch to cover WPPSS Plant 1.

For the Tri-Cities, an area which has prospered from the

nuclear industry since the dark days of WWII, the ramifications of mothballing Plant 1 came clearly and quickly. WPPSS officials figured it would cost 12,000 jobs and a \$21 million monthly payroll in the Tri-Cities alone.

But by April's end, the decision was made, although some board members complained that Johnson had given them an ultimatum, not a recommendation. Layoff notices started going out on May Day, and the board set a \$590 mil-

lion bond sale for Plants 2 and 3.

Plant 1, 60 percent complete and upon which \$2.2 billion had been already spent, was headed for mothballs.

So why did BPA recommend Plant 1? There were a number of reasons; some stated publicly, some privately.

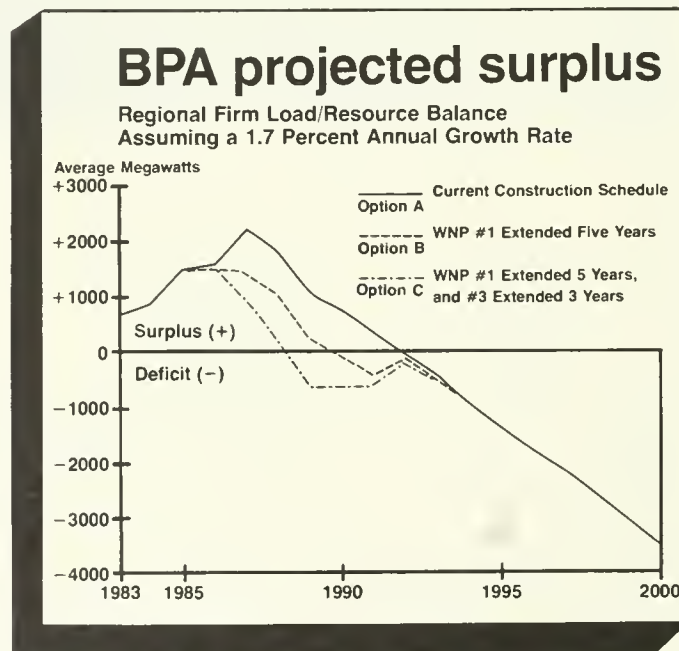
First was the split ownership of Plant 3. While WPPSS owns 70 percent, the remainder is held by four private utilities (Puget Sound Power and Light, Washington

Water Power Co., Portland General Electric, and Pacific Power and Light). To mothball Plant 3 would have required 80 percent of the ownership shares. The private utilities — some anticipating faster load growth and needing the plant operating so it could be included in their rates — turned thumbs down to any delay, various utility officials said privately.

BPA also noted that the Sat-sop plant was closer to the load centers (Seattle and Portland), meaning less power lost from long transmission lines. The federal power marketing agency said it would also be easier to restart Plant 1 because it was near a "skilled nuclear labor force."

But privately, utility officials conceded that there was also a bit of energy politics at play. If Plant 3 was mothballed, reasoning went, western Washington's attitude against nuclear power might prevent the plant from ever being restarted.

For BPA's Johnson, it had been a difficult role in an awkward play. The three WPPSS projects, financially backed by BPA through the elaborate "net-billing" arrangements, had been started in the early '70s to meet a projected swelling power deficit. Now, thanks to the projects' swelling cost and drop-



ping demand, BPA projected a growing surplus, perhaps more than 2,000 megawatts if the plants were completed as scheduled. Inside Bonneville, there were questions whether that much surplus power could be sold to the region's sole customer, California, and whether it could be sold at the cost to produce it. California energy officials had already told the region's utilities they only wanted so much power — and at a bargain price.

The mothballing saga also underscored BPA's arm's length control over the net-billed projects. BPA was banker; not builder. What BPA owned, in the terms of the net-billing accords, was the "capability" of the plants to produce power; not the plants themselves. BPA's control was ultimately on the purse strings. If the Supply System tried to override Johnson's recommendation, some utility officials speculated, BPA might just pull the strings shut.

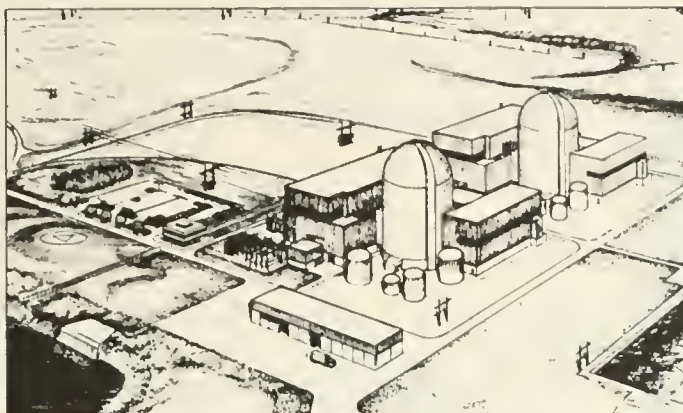
Yet the two tallest obstacles were beyond even BPA's grasp.

With last fall's approval of Initiative 394, Washingtonians gave voters in service areas of the 23 WPPSS member utilities a right to okay any bond offer after July 1. Barring a court reversal, voters will get their first chance this November.

And uncertainties — over forecasts of need and outcomes of elections — made Wall Street nervous. Municipal bonds, especially those backed by a federal agency, were supposed to be low-risk investments. Now Wall Street, once seemingly the Supply System's bottomless coffer, was turning tight-fisted. And the investment community told BPA and WPPSS there was even a limit to financing these projects — projects once considered golden.

PGE drops Pebble Springs N-plant

Portland General Electric has withdrawn an Oregon state application to build the



Pebble Springs: Artist's conception of PGE's proposed nuclear plant.

proposed twin Pebble Springs nuclear plants in Eastern Oregon.

The Portland-based private utility dropped its state application in early April, one day after Oregon Public Utility Commissioner John Lobdell ordered PGE and Pacific Power and Light to write off the multi-million dollar investments as a loss.

PGE, with 47.1 percent of Pebble Springs, has invested \$134 million. Pacific Power, which holds 29.4 percent of the project, has invested \$83 million. The remaining 23.5 percent of Pebble Springs is held by Puget Sound Power and Light, which operates in Washington State. Puget Power has invested \$65.5 million.

PGE President William Lindblad told the Oregon Energy Facility Siting Council that it was in "the best interest" of PGE stockholders and customers to withdraw the company's state application for Pebble Springs.

Lindblad noted that many conditions had changed since the twin plants were proposed in 1972, and, in particular, energy forecasts were running much lower than those of the early '70s.

PGE also asked the federal Nuclear Regulatory Commission to delay or cancel a meeting scheduled originally for late April on the Pebble Springs projects.

Lindblad told reporters, however, that the utility was not ready to totally scrap the nuclear projects and withdraw its federal license application.

Meanwhile, Lobdell's order meant PGE and PP&L stockholders would have to absorb the \$183 million already spent for the project. Lobdell's order would require PGE to write off the entire \$134 million it has spent on Pebble Springs and would require PP&L, which operates in several western states, to write off \$49 million as the Oregon share.

While the loss was shifted to stockholders, it is possible that the utilities can recover some of their expenses through tax write-offs and sales of equipment already purchased for the twin plants.

Puget Power delays Hanford N-plants

Puget Sound Power and Light Company, noting "uncertainties" over projected electric power demands, has asked the Washington Energy Facility Site Evaluation Council (EFSEC) to postpone summer hearings on the need-for-power issue related to their proposed nuclear power project on the Hanford reservation in Eastern Washington.

Robert V. Myers, Vice President of Generation Resources for Puget Power, said the utility was requesting the delay following the release of two twenty-year forecasts which suggest that the Hanford units might not be needed until the late 1990s or after 2000.

Myers noted that the forecast for the Independent Review of Washington Public Power Supply System Plants 4 and 5 "suggests that the Hanford units will not be needed until after the turn of the century." The utility executive also noted the recent Bonneville Administration forecast and said that even under the federal power marketing agency's projections, the Puget Power plants would not be needed until the late 1990s.

While the Legislature study is open to "serious question" and BPA's forecast is still in draft form, Myers said neither forecast could be ignored. Myers noted, however, that a soon-to-be-related forecast by the Pacific Northwest Utilities Conference Committee, an umbrella group for the region's public and private utilities and energy intensive industries, would show that the Hanford plants might well be needed in the early 1990s.

Puget Power proposed the plants in the early '70s and originally wanted to build them in Skagit County in Northwest Washington. A 1979 county-wide referendum, however, prevented Puget Power from renewing its building permit for the projects and forced the utility to move the proposed twin nuclear reactors to the Hanford reservation.

Puget Power's letter to EFSEC noted the general uncertainty surrounding both the forecasts and resources in the region, and noted in particular the question of whether plants 4 and 5, terminated early this year, would be sold to new owners and completed.

"In view of the still evolving uncertainties, we believe it would be premature, and probably fruitless, to conduct evidentiary hearings on the need for power this summer," said Myers. "The facts are simply not in yet. We believe that the November election and the issuance of the regional plan by the Northwest Power Planning Council in April 1983 will provide the most definitive answers to these uncertainties."

Myers emphasized that the utility nevertheless was not abandoning the projects.

PNUCC forecasts power deficit

While the demand for electricity will be lower than anticipated, the Northwest could still face a power deficit by the late 1980s, according to a newly released energy forecast by Northwest utilities.

The forecast, by the Pacific Northwest Utilities Conference Committee, projects a compounded annual growth rate of 2.5 percent over the next 20 years. The utilities' latest forecast is a reduction from last year's projected growth rate of 2.8 percent, and means electric loads would be 1400 megawatts lower than previously estimated.

"The revised forecast reflects changes in economic and demographic assumptions and conservation savings," said Randy Hardy, executive director of the PNUCC. "Key among these are projections of population and employment, which are lower than last year's estimate, and electricity price, which is higher."

The PNUCC is a coordinating group for the region's public and private utilities and Direct Services Industries. The PNUCC has done load forecasts since the late '50s and has long been the primary forecaster for Northwest utilities.

The PNUCC's latest projection comes from forecasts of individual utilities throughout the region, known as the Sum of Utilities forecast. The PNUCC's econometric computer cross-check forecast comes in at 2.1 percent. Both forecasts take into consideration the termination of Washington Public Power Supply System plants 4 and 5, and delay of WPPSS plant 1 and three of the Washington Water Power Company's Creston coal facilities.

While slower load growth reduces the chance of shortages between now and 1987, the PNUCC says that the delay in WPPSS projects and in the Creston coal plants could increase the probability

of shortages between 1987 and 1992.

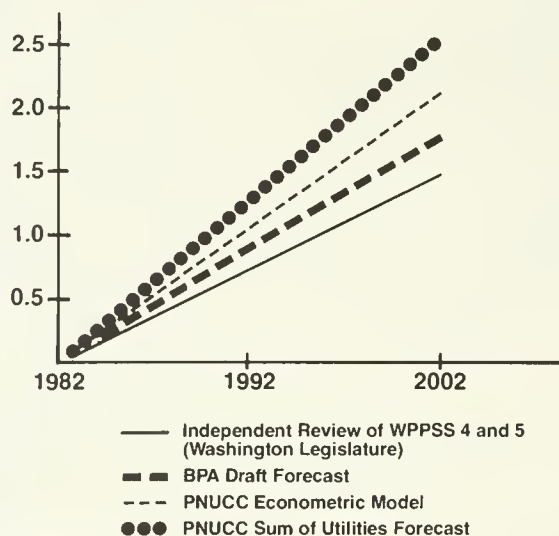
The PNUCC forecast also anticipates a loss of at least 490 megawatts of firm power to incorporate minimum flow requirements that fisheries agencies suggested for the Northwest Power Planning Council's fish and wildlife program, which is now being developed.

Despite all the numbers, Hardy said major uncertainties still underpin the PNUCC's or any other energy forecast.

"In view of such future uncertainties, the most prudent course of action for the present, to ensure a cost-effective and environmentally acceptable system, is to maintain current schedules," said Hardy.

"By early 1983, publication of the Council's forecast, and subsequent iterations of the BPA and PNUCC forecasts, should hopefully narrow the range of uncertainty for resource planning."

20-Year Forecasts of Regional Electricity Demand



Court overturns BPA-DSI contracts

The federal Ninth Circuit Court of Appeals, in the first court case over the Northwest Power Act, has said that long term contracts between the Bonneville Power Administration and 17 energy-intensive industrial customers are invalid.

The three judge panel said BPA, the federal power marketer for the Northwest, violated the long-standing "preference" of the region's public utilities when it offered new 20-year contracts to the direct service industries, primarily aluminum companies located in the region.

"Giving all due deference to BPA's construction of the Act," the appellate judges wrote, "we nevertheless find its interpretation unreasonable. We find that the explicit and long-standing preference retained in the Act controls rather than the ambiguous provisions relied upon by BPA."

The lawsuit, filed by 12 Northwest public utilities, centered on BPA's allocation of

"non-firm" energy to the DSIs over claims by the public utilities. Because of varying water conditions, the federal hydro system periodically generates more power than is needed to meet the "firm" loads of BPA customers. The DSIs sought through their contracts first access to this power.

The public utilities claimed that the BPA contracts, offered in August along with contracts to the region's public and private utilities, violated the consumer-owned utilities' historical right to federal power.

The federal appellate panel said the contracts violated the Act only if BPA's interpretation of the law was "unreasonable."

The panel ruled that, indeed, BPA's interpretation was unreasonable and ran counter to two provisions of the Northwest Power Act which guarantee that "all power sales under this Act shall be subject at all time to the preference priority provisions of the Bonneville Project Act of 1937." The judges also noted that preference provisions had been included in Federal Power Acts since 1906.

The DSIs' contracts provide for power interruptions under certain conditions. The energy-intensive industries had hoped to use the non-firm power to avoid possible power interruptions.

But the appellate court said "the initial allocation of non-firm power is no less subject to preference than firm power," and ruled that the new contracts between the DSIs and BPA violated the rights of the preference customers.

BPA had relied on statements in the legislative history of the Act, passed by Congress in 1980, in forming its interpretation of the non-firm power sale. But the three-judge panel said the legislative history was too ambiguous and inconsistent. "It is unfortunate that the legislative history fails to give a clear indication of Congressional intent," said the court opinion handed down in mid-April.

Northwest public utility officials said the court ruling could save their ratepayers millions over the next 20 years

by giving them preferential access to cheap federal non-firm power to be substituted for more expensive new generation. A spokesman for the City of Seattle said the ruling could save Seattle City Light anywhere from \$10 million to \$15 million annually in power costs.

Meanwhile, the DSI's have petitioned for a rehearing, seeking to have the full Ninth Circuit Court of Appeals hear the case.

Council seeks provisions in BPA-DSI contracts

New contracts being renegotiated between the Bonneville Power Administration and the energy-intensive direct service industries should not interfere with development of a regional fish and wildlife plan for the Columbia River system, the Northwest Power Planning Council has said in a letter to BPA Chief Peter Johnson.

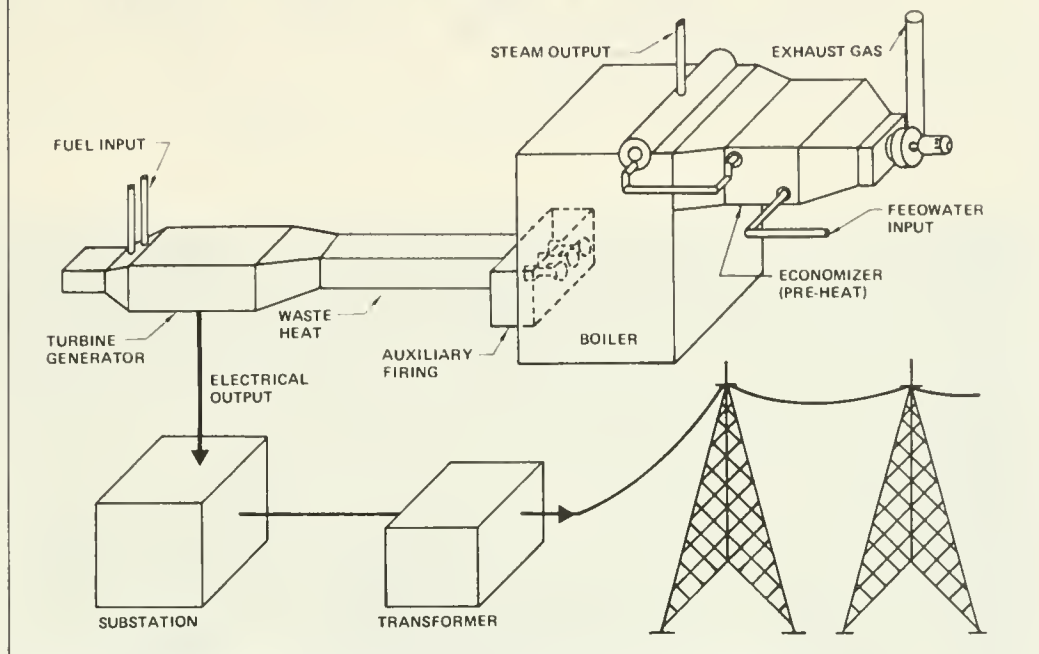
"It is imperative that BPA keep in mind throughout these negotiations the Council's role in power planning and in fish and wildlife protection, mitigation and enhancement," said the Council's letter.

The Council, charged by law to develop both a plan to aid the Columbia's fisheries and a 20-year regional energy plan, asked BPA to include provisions in its revised contract with the DSI's that would allow amendments to any power sales contract to conform with the Council's plan.

BPA is renegotiating contracts with the DSI's following a U.S. Ninth Circuit Court of Appeals decision overturning long-term contracts between the federal agency and the industries, largely aluminum manufacturers in the Northwest.

The Council's letter came in response to testimony during its fish and wildlife hearings in

Puget Power - Boeing cogeneration unit



Dual purpose: Utility-industry project produces electricity and industrial heat.

March from Bruce Mizer of In-talco Aluminum Company. Mizer said the DSI's objected to stream flows in excess of minimum amounts for downstream migration of fingerlings because it might interfere with BPA's ability to deliver full power to the DSI's.

Mizer said if the Council's fish and wildlife program increased the risk of power interruption "then the Council must also adopt measures to replace lost firm power capability with firm resources which do not diminish the regional power system's flexibility to meet all regional loads."

The Council in its letter, noted it had "both the authority and responsibility" to develop a fish program. "BPA twenty year sales contracts should not in any way hinder the Council's ability to perform these functions," the letter said.

The letter urged BPA Administrator Johnson to "take action in upcoming DSI contract negotiations to assure that there will be no conflicts with the Council's discretion in designing a fish and wildlife program or an energy plan."

"The Council's responsibility is to develop resources to

meet the BPA's obligations," Brett Wilcox, executive director of the Industrial Customers of Bonneville, told The Oregonian. "It is not to tell the BPA what its obligations are."

Puget Power, Boeing sign cogeneration agreement

Puget Sound Power & Light Company and The Boeing Company have signed an agreement for one of the largest new cogeneration projects in the region.

Designed and built by Boeing Engineering and Construction Company, the project consists of two 4.5-megawatt Allison turbine generators fired by natural gas or contaminated jet fuel. The Boeing Company is financing the cogeneration project.

Robert V. Myers, Puget Power's vice president of generation resources, said the project should be on line late this year and produce enough

energy to serve approximately 4,800 average residential customers.

The process is known as cogeneration because a single source of fuel is used to simultaneously produce electricity and heat for industrial purposes.

Myers explained that Puget Power will purchase the output on the basis of its avoided cost, which is the cost of the last 100 megawatts of power needed to meet customer loads. The by-product gases will be used to produce steam to supply the heating and manufacturing needs of Boeing's Fabrication Division in Auburn, which will continue to purchase electricity from Puget Power.

Howard C. Donelson, Boeing's utility and environmental control manager, said, "This kind of utility/industry cooperation is a productive approach in solving the region's energy problems."

If the pilot project proves successful, both companies hope cogeneration can be implemented at other facilities in Puget's territory.

Energy concerns aired at Council town meetings

Fish, irrigation, conservation impacts questioned

Questions about whether we'll have enough electric power in the future and where it will come from dominated discussions last month as citizens attended a series of town hall meetings in Oregon and Idaho by the Northwest Power Planning Council.

Farmers throughout agriculturally-oriented Eastern Oregon and Idaho voiced concerns about the Council's fish and wildlife plan and its impact on water for irrigation.

"It's hard for us to conserve energy in mid-summer when it's vital to keep our pumps running," said Phil Wheeler, a farmer in Southeastern Idaho.

"You add too much more to my power bill, you're going to break me," said Wayne Winter, another Idaho farmer. Winter's concern about the rising cost of electricity for irrigation was also on the minds of Oregon farmers when they attended a Council town hall meeting in Pendleton.

But Council Vice Chairman Bob Saxvik of Idaho cautioned the farmers that the Council wasn't looking at conservation as a form of curtailment. "We're just looking at more efficient ways to pump," said Saxvik, adding that conservation was just good business sense.

Nevertheless, farmers throughout the Columbia River Basin area, the Northwest's fertile farm belt, said they were afraid they would be denied irrigation water in order to meet the Council's fish and wildlife plan. The Council is required by the Northwest Power Act to develop a long-range plan to help salmon and steelhead fisheries along the Columbia and Snake Rivers.

Farther west, however, citizens were concerned whether the Council was going to do enough to protect the rivers' once flourishing fisheries. At



Town meetings: If we can get to the moon, we can save the fish, said Idaho's Mills.

the Eugene town hall meeting, a spokesman for the Commercial Fishermen's Union urged the Council to authorize construction of fish passages throughout the Columbia with the costs worked into the Bonneville Power Administration's wholesale electric rates.

Responding to a similar statement at the Boise town hall meeting, Idaho Council member Larry Mills said, "We're going to have to have enough water to flush those little fellas (the salmon and steelhead fingerlings) out to sea."

"Seems to me if we can go to the moon," added Mills, "we ought to be able to find a computer that can figure out how to flush those fish even when we have a critical water year."

While there was concern about whether the Northwest would have enough energy, there was also considerable question about where new energy sources would come from.

One Eugene woman suggested that the Council should push ahead on renewable resources but try to do every-

thing it could to protect "the natural beauty of the Northwest."

But Oregon Council member Roy Hemmingway said that wasn't necessarily an easy trick. Hemmingway noted that one of the potential renewable resources is wind; however, the prime windmill sites in the region are along either the pristine Oregon Coast or the Columbia Gorge.

Hemmingway said development of renewable windmills at either of those sites would do little to enhance or preserve the aesthetic beauty of the Coast or the Gorge.

At the Council's townhall meeting in Longview, Washington, numerous residents raised concerns about BPA's conservation program and wanted to know whether the Council could do anything to help.

Council Chairman Dan Evans told the group that the Council's plan would clearly spell out some conservation goals which Evans felt would help accelerate the process.

A number of citizens also asked questions about the

troubled Washington Public Power Supply System and its various nuclear power projects now under construction.

"If the Power Council had been in place at the time, WPPSS wouldn't have happened," said Mills.

Council member Saxvik also cautioned about trying to pin blame for the termination of WPPSS Plants 4 and 5. "Wall Street — with all the cost overruns, labor problems, and rising interest rates — was the one who shut down the shop," said Saxvik.

Some citizens also raised concerns about regional energy forecasts, which once showed dramatic growth in demand for electricity but recently have been steadily and sharply dropping.

Idaho Public Utility Commissioner Perry Swisher, speaking at the Boise town meeting, cautioned all the forecasts must be "fair."

"You can pretend anything you want to pretend if you can get a legislative majority," Swisher said in apparent reference to the Idaho legislature's recent moratorium on inverted rates. "The mistakes that will be made will be mistakes made for special pleaders."

"But I'm not worried about the Council at all when it comes to forecasting."

Coming to grips with uncertainty

Council adopts planning method based on flexibility

"The trouble with our times is that the future is not what it used to be," said the French philosopher Paul Valéry.

That's perhaps nowhere more true than in trying to forecast the Pacific Northwest's energy future. The stabilities of the past have been knocked over by towering uncertainties about the future. As testaments to that uncertainty, two multi-billion-dollar nuclear plants, not even half finished, stand abandoned, with a third in mothballs.

So how do you deal with these uncertainties which have put the region, as Council Chairman Dan Evans puts it, on a narrow path along the ridge between overbuilding new power and underbuilding?

Utilities, traditionally, have established a single-point forecast of power demand and built accordingly, figuring it is better to err over rather than under.

Forecasts are fickle, however; prone to sudden unforeseen economic, social, and technological changes and assumptions about a future far removed from the present.

To cope with the uncertainties, the Northwest Power Planning Council has adopted a planning philosophy which Council members say recognizes the inherent problems in forecasting and tries to cut the risk and cost of being wrong. The Council's planning method emphasizes a forecast range, an array of resources to meet particular power demands, and regional risk sharing.

"We've got to face it, we're going to be wrong on any long-range forecast," says Council member Roy Hemmingway of Oregon.

To avoid pinning false hopes — and plans — on any single figure forecast, says Council member Charles Collins of Washington, the Council will look at a range of growth scenarios. What's the consensus about the highest likely growth scenario? What about the lowest?

Recognizing that actual growth can fall anywhere in between, explains Hemmingway, the Council would then begin to develop a power plan, stacking resources by their need, cost, and flexibility. The Council would plan, first, for the resources to meet the low demand scenario, with the cheapest resources coming first as required by the Northwest Power Act. Then a combination of flexible resources



Dealing with the future: "We are here to make some judgments not only about what the future is going to be, but about how to *deal* with the future," says Oregon Council Member Roy Hemmingway.

—those which have shorter lead times for completion and/or those which can be built in increments — are stacked up to the high growth scenario, again getting in line by cost, cheapest first.

The plan would then be reviewed frequently, possibly annually, and adjusted according to changing power demand. This way resources could be accelerated or slowed, making sure the region had sufficient power at the lowest cost without facing the economic risk of having too little power or more expensive new power than needed.

In addition to the actual acquisition of resources, the Council would also look at resource options, sort of insurance policies for adequate supply. The Council could tentatively approve a particular project as a resource option. The sponsor would agree to do the initial work — such as early engineering work, siting and licensing, getting the project ready to start — and hold the project until a particular

decision date. Then the Council would decide whether to go ahead with the project, delay it, or cancel it altogether. In any case, the region would bear the cost of any option developed for the region's possible benefit.

The key to the planning method is recognizing the inherent forecasting uncertainties and trying to find more flexible ways to deal with changing conditions.

"The future is one where I believe we must look at a much wider variety of responses," says Council Chairman Dan Evans. "Perhaps the best way to put it is: we ought to be building a supermarket of electrical resources. And we ought to stock the shelves with as many different kinds of resources as we can."

The Council recently circulated a discussion paper about the planning concept, titled "The Path Along the Ridge: Regional Planning in the Face of Uncertainty," written for the Council by University of Wash-

(Please turn to page 19)

To save the salmon

(From page 1)

Council to dramatically improve the lot of the Columbia River System's fish and wildlife. And this charge, tucked away amid a sea of pages about energy, may be the most overlooked and underestimated task Congress handed the Council:

Overlooked because so much attention recently has been focused on energy problems of WPPSS, rising electric bills, and a ratepayers' rebellion; and

Underestimated because repairing the badly depleted fish runs of the Columbia and Snake Rivers is no small chore, in terms of either dollars or striking a truce between conflicting parties. It is a case of balancing modern society's technological drive with that of nature's, and seems certain to require a new spirit of cooperation if fish and wildlife are to be accorded the co-equal status Congress intended.

By law, the Council must develop "a program to protect, mitigate and enhance the fish and wildlife, including related spawning grounds and habitat, on the Columbia River and its tributaries" even before putting together a plan for the region's energy future. For since the beginning of the hydro-electric development of the Columbia, fish and the river's power operation have become inseparable issues. The recommendations to the Council solicited from federal, state and tribal fish and wildlife agencies bear this out. For the past 50 years, electric power, not the salmon, has been King of the River.

The decline of the Northwest's natural, once bountiful fishery began more than a century ago as settlers came westward. The settlers competed with earlier settlers, the Indians, for the West's resources — resources which must have appeared inexhaustible: mountains of timber, ranges of prairie for grazing, lush valleys for farming, and rivers teeming with fish.

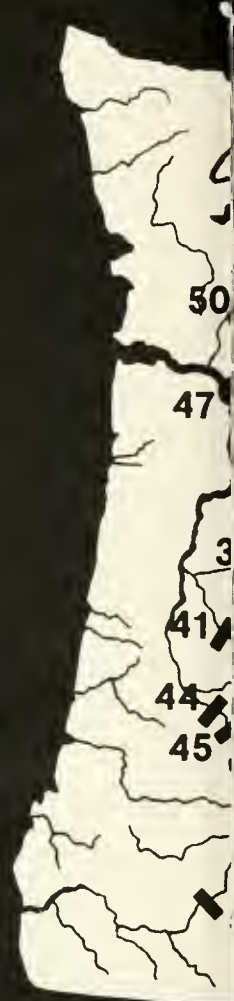
The land and the river seemed to provide all the needs of the native population, whose culture was built around the fish. Northwest Indians thrived on Chinook, Sockeye, and Steelhead trout. It fed their bodies and their souls. Fish were more than a dietary mainstay; they were central to the ceremony and religion of the Indians. Harold Culpus of the Warm Springs Nation describes it this way:

"Sunday was the time that he worshipped — sometimes Friday, Saturday,

NW dams & lost fish h

Map shows federal and non-federal dams in the Columbia River system. Shading indicates area lost to fish migration and spawning as a result of hydroelectric projects.

- | | |
|---------------------|--------------------|
| 1 Bonneville | 29 Hells Canyon |
| 2 The Dalles | 30 Oxbow |
| 3 John Day | 31 Brownlee |
| 4 McNary | 32 Black Canyon |
| 5 Priest Rapids | 33 Boise Diversion |
| 6 Wanapum | 34 Anderson Ranch |
| 7 Rock Island | 35 Minidoka |
| 8 Rocky Reach | 36 Palisades |
| 9 Wells | 37 Pelton |
| 10 Chief Joseph | 38 Round Butte |
| 11 Grand Coulee | 39 Big Cliff |
| 12 Keenleyside | 40 Detroit |
| 13 Mica | 41 Foster |
| 14 Duncan | 42 Green Peter |
| 15 Libby | 43 Cougar |
| 16 Boundary | 44 Dexter |
| 17 Albeni Falls | 45 Lookout Point |
| 18 Cabinet Gorge | 46 Hills Creek |
| 19 Noxon Rapids | 47 Merwin |
| 20 Kerr | 48 Yale |
| 21 Hungry Horse | 49 Swift |
| 22 Chandler | 50 Mayfield |
| 23 Roza | 51 Mossyrock |
| 24 Ice Harbor | 52 Gorge |
| 25 Lower Monumental | 53 Diablo |
| 26 Little Goose | 54 Ross |
| 27 Lower Granite | 55 Lost Creek |
| 28 Dworshak | |



abitat





Lost falls: Indians once fished at Celilo Falls, since covered by water backed up by The Dalles Dam.

Sunday — and they had to have that salmon as part of the traditional way, as part of the ceremony.

"In the beginning, from the time of creation of the Indian as it is told . . . it is interpreted that food is the most sacred thing in this country — food, love and relating a person, brother or sister . . .

"That's why the Indians, when the white man first came to this country, in the Columbia River, he spread the table out and set the food out for him, though he was a stranger."

The "stranger" and the Indian would come to clash — one believing in his "manifest destiny;" the other believing the land was his and he was in a special harmony with nature. The wars between white man and red man ended in the mid-1800s with a series of peace treaties. In the treaties, the federal government recognized the Native Americans' prior claim to the water and fish, giving them the right to fish in their "usual and accustomed places in common with" territorial settlers.

The treaties were an acknowledgement of the Indians' special relationship to the

land, the river and the fish. The Indians had husbanded the land and water as integral parts of their culture and livelihood. Yet, the treaties also marked a turning point for the tribes.

"They took only as many fish as they needed, and none was wasted," writes Anthony Netboy. "The red men were true conservationists — at least until the white men taught them that fish were salable commodities that could make them rich."

Using new catching methods, like the fish wheel, set net and especially the "iron chink," which revolutionized the canning industry at the turn of the century, the commercial salmon industry rapidly developed and the tribes quickly recognized the commercial value of the fish. Soon, the river was being taxed beyond its ability to replenish itself. Once conserved by the Indians, the fish runs became overharvested.

Fishing alone, however, did not deplete the Columbia's fishery. Poor logging, grazing, and farming practices caused the land to erode, leaving blankets of silt over natural spawning beds and rendering

them useless. And irrigation extracted its price. Under the Reclamation Act of 1902, federally funded and built dams blocked up streams and rivers, storing water for flood control and irrigation. Scores of farms cropped up. Fish habitat disappeared.

Still, as the Northwest's hydro-electric era began, the Columbia River fishery was relatively strong. But development of the river — for navigation, for irrigation, for power production — seemed certain to accelerate.

The election of Franklin Delano Roosevelt started economic recovery programs of the New Deal and gave the green light to the pet projects of Oregon's senator Charles McNary and Washington's C. C. Dill.

McNary wanted a lower Columbia dam for navigation; Dill wanted an upriver dam for irrigation. By the end of the first New Deal Congress in 1933, McNary got his Bonneville Dam and Dill his Grand Coulee. Four years later, Congress approved the Bonneville Power Administration, then a temporary agency, to build a

'When finished in 1975, the Columbia River dams were the world's greatest liquid electric machine: 28 dams, 13,000 megawatts of low-cost, renewable electricity, with storage capacity of 20 million acre feet . . . But there was less water for increasingly fewer fish.'

set of transmission lines and sell the federal power from the dams of the Army Corps of Engineers and the Bureau of Reclamation. BPA, spurred by the public power movement and better economic times, sold electricity to any and all comers. More dams were built, and the taming of the mighty Columbia was underway.

When it was finished in 1975, the Federal Columbia River Power System (FCRPS) stood as the world's greatest liquid electric machine: 28 dams, producing more than 13,000 megawatts of low-cost, renewable electricity, with a storage capacity exceeding 20 million acre feet of water. And there's more.

Dams owned by public and private utilities generate even more power. And other state and federal dams hold back even more water for irrigation and flood control. But there's less water for increasingly fewer fish.

A few numbers illustrate this unhappy result. Between the mid-1930s and the mid-1970s — as the power system fully developed — the commercial Columbia salmon catch declined two-thirds, to 6.5 million pounds from 21 million. The accessible habitat for natural spawning shrank by more than half, to 73,000 square miles from 163,000 square miles. Similar reductions occurred in the number of upriver Chinook salmon re-entering the river.

The culprits, however, were not the dams alone. Fish runs had begun to decline even before the completion of Bonneville dam in 1938 as overfishing, destruction of natural spawning beds and ocean fishing claimed a larger and larger share of the stocks.

"The once prodigious anadromous runs (migrating salmon and steelhead) of the pre-dam era were so depleted by the late 1970s that the federal fisheries agencies initiated administrative proceedings to consider whether to designate certain up-

river runs as 'threatened' or 'endangered,' thus invoking the protection provided by the Endangered Species Act," writes Michael Blumm, editor of the Anadromous Fish Law Memo.

Fisheries officials wanted redress from the power system, and focused their attention on the Northwest Power Bill which was under Congressional consideration. While Northwest Congressmen urged the conflicting power and fisheries interests to develop a legislative compromise, the fish found another friend on Capitol Hill: Michigan Congressman John D. Dingell. Chairman of the key House Commerce subcommittee and an avid sportsman, Dingell spelled out his terms for letting the bill out of his committee with unquestioned clarity: protect the fish or no bill.

John Dingell — and the fish — won.

Last summer, the Council began the process to develop a fish and wildlife program. By law, the Council was required to solicit recommendations from various fish and power entities, these proposals becoming the groundwork for the Council's eventual program. On November 15 the Council received 2,200 pages of recommendations. Chief among these was the work of a coalition (commonly known as the Ad-Hoc Executive Group) of six federal and state fish and wildlife agencies and the Columbia River Inter-Tribal Fish Commission.

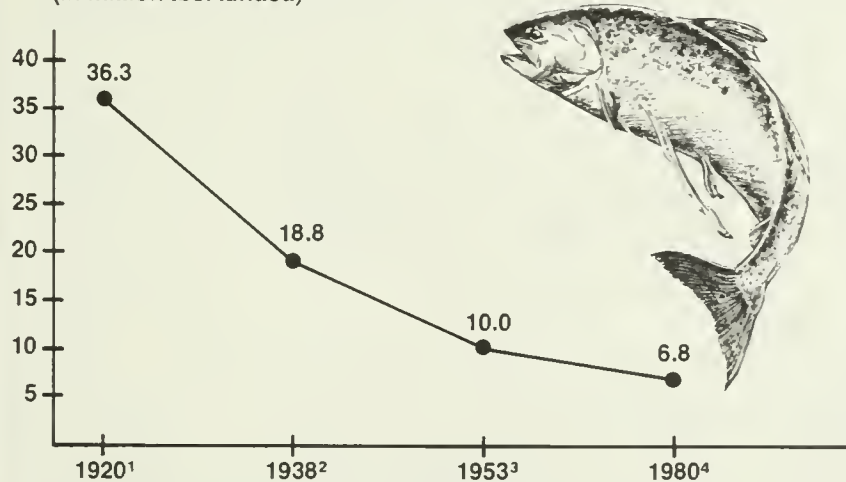
At the base of the coalition's recommendations was the proposal to restore the salmon and steelhead runs of the Columbia and Snake to their pre-1953 levels — a time before the completion of McNary Dam. The coalition's goal, which targets the highest fish levels prior to 1953, would provide the following increases:

	Current 5 year average	1953 pre- McNary
Spring Chinook	101,000	300,000
Summer Chinook	41,000	200,000
Fall Chinook	294,000	400,000
Sockeye	55,000	200,000
Coho	45,600	164,000
Summer Steelhead	124,000	400,000

To achieve the goal, the coalition said six objectives would have to be met: first, improving the survival of small fish headed downstream to the ocean; second, improving the chances of survival of adults

Columbia's declining fisheries

Annual in-river harvest (commercial and sport) of all species of salmon and steelhead (in million lbs. landed)



¹Prior to major dam development

²Bonneville Dam completed

³McNary Dam completed

⁴Most current figures available

returning to spawn; third, taking steps to improve natural reproduction through better spawning habitat; fourth, improving and increasing the hatchery production; fifth, adjusting power planning and river management practices to give fish equal status; and finally sixth, formally incorporating fisheries experts in planning, management and operation of the power system.

To give the fingerlings a better chance of survival, the coalition's state and federal members proposed minimum stream flows to carry the tiny fish out to sea, improved bypass around the dams, and efforts to reduce predation from other fish and birds. The tribes, however, sought higher, or maximum, flows to aid downstream migration.

To improve adult upriver migration, the coalition recommended certain water conditions to reduce dangers from nitrogen saturation for returning fish, and better fish ladders to help the adult salmon and steelhead make their ways to their original spawning areas.

Natural reproduction could be improved, the coalition said, by improving flows between the Snake's Hells Canyon and Lower Granite Dams, the Hanford Reach just above the Tri-Cities, and in the Willamette Basin. The fish runs could be expanded further, the group said, by improving and enlarging existing hatcheries and building new hatcheries.

But fisheries interests said they are concerned the recommendations won't be met unless some fundamental manage-

ment changes are made in the river operation.

"The current situation cannot continue," the coalition said. "Either the institutions responsible for power planning, management and operation must modify their basic assumptions for operating the river to include equitable treatment of fisheries, or the ultimate extinction of upriver runs must be accepted. Realistically, there is no middle ground."

In tandem with the management changes, the coalition urged the Council to formalize additional "fisheries" seats at the power table.

Based on the recommendations, the Council held a series of five hearings throughout the region in March. Two-hundred witnesses came forward to testify, focusing on the coalition's recommendations and particularly the proposal of setting minimum flows.

"The problem our agency sees with minimum flows," said Tim Wapato, executive director of the Columbia River Inter-Tribal Fish Commission, which supported higher flows, "is that they pose an arbitrary level of survival on the fish." Wapato said higher flows would "ensure that maximum survival occurs during the juvenile migration."

But minimum or optimum flows could pose another problem for non-migrating fish which spawn and live in the upper reaches of the Columbia River System, such as behind Hungry Horse Dam on the Flathead River in Montana. The Montana fisheries agency was concerned that flows

to help downriver migrating fish might require upriver reservoirs to be drawn down, slowing vital stream flows and eliminating natural spawning beds of the non-migrating or resident fish, said Pat Graham of the state's Department of Fish, Wildlife and Parks.

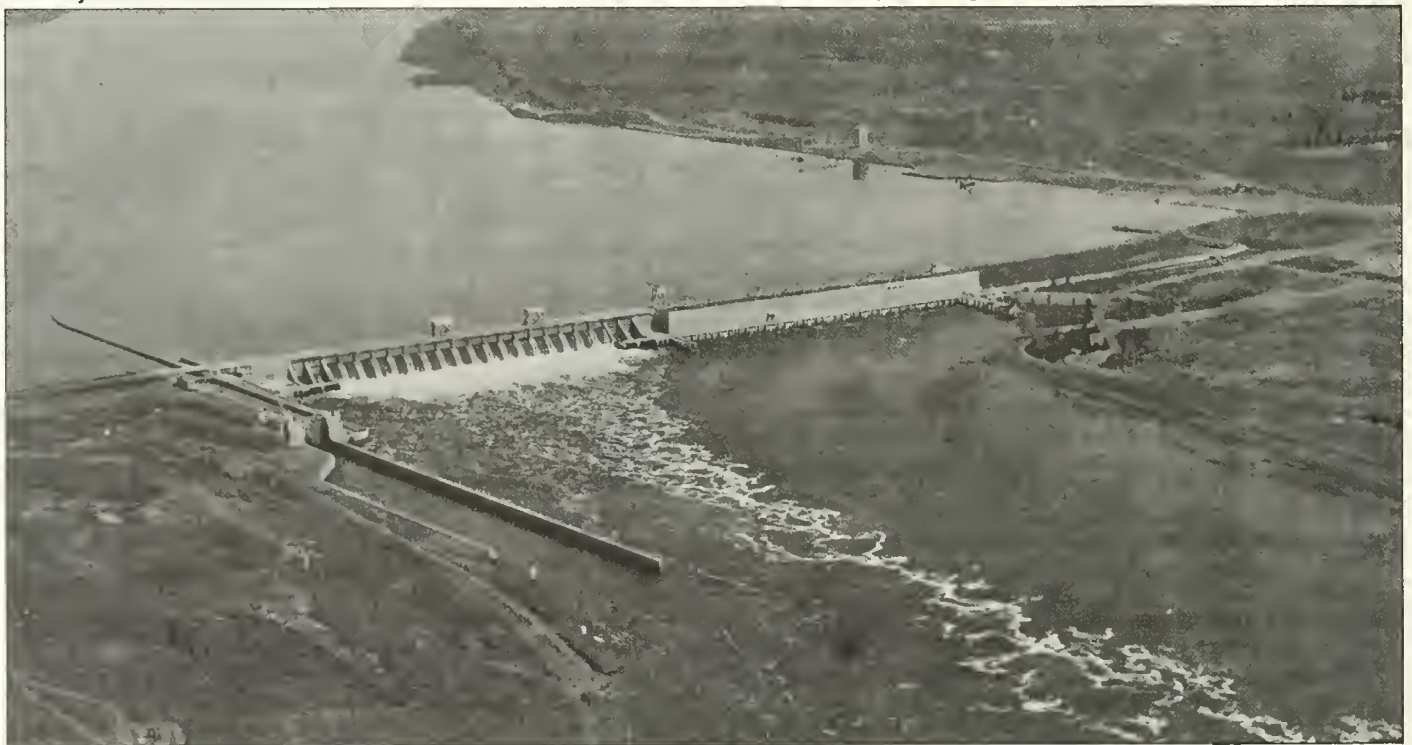
The flow issue highlighted man's intervention in the workings of the river. The dams had created a series of lakes, carefully fed one from another to gain the most out of the river's hydro-electric potential. Increasing the flows during crucial periods — actually spilling water to flush the juvenile fingerlings downstream past the dams and the potentially deadly turbines — could get more fish out to sea, to eventually return and spawn. But water spilled for fish was also water lost to spin the power turbines.

"The ability to regulate the natural stream flows is extremely important to the region's power system," warned Merrill Schultz, Director of the Inter-Company Pool of private utilities. "Without the ability to impose an artificial regulation upon stream flows, the existing Federal Columbia River Power System would produce only about one-third the electricity it now generates." To replace that power loss, Schultz said, could cost billions.

Instead, Schultz and other utility officials suggested "transportation" — collecting the fish at various points along the river and barging or trucking them around some of the dams, thus allowing the con-

(Continued on page 16)

McNary Dam: Fish coalition wants runs returned to levels before 1953, when Corps of Engineers dam was completed.





Fish study: Council members watch crew at Rocky Reach Dam collect fish for a migration study.

Mid-Columbia projects pivotal to fish future

They straddle the Columbia River like Paul Bunyan-sized stepping stones, spanning the river from just below the Methow River down to the heart of the once-arid Columbia Basin.

The Mid-Columbia hydro-electric dams crank out more than 4,000 megawatts of electricity for utilities around the region and mark the final man-made obstacles in the upstream migration of salmon and steelhead.

The role of the Mid-Columbia dams, in both power generation and fisheries enhancement, brought members of the Northwest Power Planning Council to tour the facilities in early May. The Council is required by the Northwest Power Act to develop a long-range plan to "protect, mitigate, and enhance" the fish and wildlife along the Columbia River and its tributaries.

The Mid-Columbia dams, owned by the Public Utility Districts of Douglas, Chelan, and Grant Counties, are products of the Eisenhower era "partnership program," which encouraged local utilities to build facilities instead of the federal government, and are the only non-federal hydro-electric facilities on the main stem of the Columbia.

Over the years, the Mid-Columbia PUDs voiced repeated reservations about spending revenues generated by the dam for non-electric purposes, such as aiding up and downstream migration of salmon and steelhead.

Nevertheless, the Mid-Columbia PUDs are pivotal players in any effort by the Council to restore the river's declining fish runs as they are the last dams up-

stream which have any fish passage facilities before reaching the road blocks of the federal Chief Joseph and Grand Coulee dams.

Council Chairman Dan Evans, and Council members Al Hampson, Larry Mills, Keith Colbo, and Gerald Mueller, came to see the Mid-Columbia facilities first hand and to talk to local utility officials about some of the major fisheries-related issues, such as downstream river flows for migration of juvenile fish, juvenile fish passage, and hatchery production facilities.

Mid-Columbia utility officials told Council members that their facilities — Wells, Rocky Reach, Rock Island, Wanapum, and Priest Rapid Dams — pose different fisheries mitigation problems than the federal dams along the Columbia and Snake Rivers.

In fact, Wells Dam, located about 60 miles north of Wenatchee and owned by Douglas County PUD, posed even a unique problem among the Mid-Columbia hydro facilities, local utility officials said. Wells Dam had both its water spillways and power turbines located in the center of the dam, while most other dams are designed to have the spillways located near the dam's center with the power turbines off to one side.

Douglas County PUD officials said this created a problem because the fish are drawn by the speed of the river flow to head down through the turbines, where they risk being killed. The utility officials said they are conducting research to see what can be done to help fish over and around the dam and also to look at other

measures to aid the fisheries.

Douglas County PUD officials said they are currently spending \$300,000 annually on fisheries measures, or about two percent of their annual revenues of \$15 million.

Chelan County PUD officials told the Council members they were engaged in extensive research to aid the fisheries. Chelan officials are studying the migration patterns of fingerling salmon and steelhead to try to determine the best types of by-pass facilities to install on Rocky Reach and Rock Island Dams.

Grant County PUD officials told the Council that they estimated the cost of juvenile by-pass facilities for their two dams, Wanapum and Priest Rapids, could run anywhere from \$14 to \$20 million per dam and urged the Council to consider a proposal for "transporting" fingerlings from just below Rock Island Dam to a spot downstream from Priest Rapids. Grant officials estimated that nearly as many fish could be saved through the transportation methods, literally trucking the fish, at a considerably lower cost.

The Mid-Columbia dams produce 4,269.6 megawatts, with much of the electricity sold to other public and private utilities.

The Council is currently developing the draft of its long-range fish and wildlife plan, which is scheduled to be published some time this summer. Public hearings on the draft plan will be held later this year.

*'The dams had created a series of lakes,
carefully fed one from another
to gain the most out of the river's
hydro-electric potential.'*

(From page 14)

tinued artificial regulation of the river for power requirements.

But some fisheries officials balk at the "transportation" notion, saying it prevents the young fish from "imprinting" their natural in-river course to the ocean. When the fish returned, fisheries people said, they wouldn't remember — there would be no imprinting — the dams and how to get around them to their natural spawning grounds.

River flow was just one tool to help fish in their downstream migration. Another problem was the power turbine blades. As the blades spin to produce electricity, they increase the flow, or velocity, of the river, creating a draw that pulls the fingerlings towards and through the blades, killing them. To save the fish, the coalition proposed installing screens in front of the turbine portals and building, where necessary, actual bypasses that would funnel fish around the dams and away from the turbines.

But changing the river's operation wouldn't be an easy trick, Army Corps of Engineers General James van Loben Sels cautioned the Council during its Boise hearing. "These recommendations," said the general of the proposed flow revisions, "conflict with one another and would seriously impact authorized project purposes such as flood control, power generation, irrigation, water supply and recreational use."

Before the Corps could comply with some of the fish and wildlife recommendations, the general said, it might require new authority from Congress for operation of the river.

Council seeks cooperation of Corps, Bureau of Reclamation

Calling for closer cooperation, the Northwest Power Planning Council has asked the Army Corps of Engineers and the Bureau of Reclamation to weigh the fish and wildlife mandates of the Northwest Power Act in their operation of the Columbia River System.

"We are concerned that many employees in an organization as large as the Corps of Engineers may not be familiar with the fish and wildlife provisions of the Northwest Power Act," wrote Council Chairman Daniel J. Evans to General James W. van Loben Sels.

Evans said the Council, required to draw up a long term program to help the Columbia's depleted fisheries, could find its program restricted by "inadvertent actions" of the Corps. The Council also asked the Bureau to delay issuing any new water contracts until the Council's fish plan is finished.

"We request, therefore, that the Corps of Engineers adopt and immediately implement internal proce-

dures to ensure that in all of its activities (including planning, studies, operations and regulation) the Corps will take into account, to the fullest extent practicable, the purpose of the Northwest Power Act and other applicable laws to protect, mitigate, and enhance fish and wildlife resources, including related spawning grounds and habitat."

In addition, Evans said the Council was concerned that the Corps might enter into grants or agreements that could create "legally enforceable property rights in the use of water or facilities" which could interfere with implementation of the Council's fish and wildlife program.

To avoid that, the Council asked the Corps of Engineers to include language in all written contracts and grants that would allow modification of the agreements to take into account the fish and wildlife program being developed by the Northwest Power Planning Council.

The Council has asked to hear back from the Corps by June 10.

new storage dams, perhaps along the Weiser River in Idaho and the Yakima in Washington, in order to have enough water to flush the fingerlings downstream.

As tangled as the issue is, the fishery issue is complicated by an already complex issue: Indian treaty rights. These rights, the coalition's proposal said, "include the right to protect the habitat of the fish" and "the tribes have reserved water rights which may be asserted to protect the fish throughout their life-cycle."

Harold Culpus of the Warm Springs Nation recounted for the Council the reaction of Chief Pip Shier during the mid-Oregon treaty negotiations. "What are you going to claim against the

United States?" the Army general supposedly asked. The chief replied, according to Culpus, "I am not going to claim anything against the United States . . ."

And cupping his hands, the chief gestured to the general as if he held the river's water, "only this — which is already mine." Those treaties, said Lionel Boyer, speaking for the Shoshone Bannock Tribe, make clear that tribal fishing rights may not be infringed. Boyer noted the Fort Bridger Treaty of 1868, and its affirmation in 1972 by the Chief Justice of the Idaho State Supreme Court that "the Indian right to share the fish commensurate with the enunciated purposes of the Fort Bridger Treaty is absolute."

"In spite of those promises," Bill Yallup of the Yakima Tribe told the Council, "power and irrigation dams have destroyed our fish runs without the slightest concern for a most solemn agreement."

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So what will it cost to "protect, mitigate and enhance" the fish and wildlife along the Columbia and its tributaries, and who will pay? The latter is the easiest of the questions. Congress, in the Northwest Power Act, said the cost of rebuilding the river's fish and wildlife damaged by the dams will be considered part of BPA's cost of doing business, and incorporated into the power marketing agency's rates. In the end, that means the ratepayers of those utilities which buy BPA power will be picking up the tab. But how big is that tab?

No one knows for sure. BPA officials say the optimum flows sought by the tribes can't be met. "Just simply," said Larry

Dean, director of BPA's Power Supply Division, "the available amount of space is not sufficient to meet the flows no matter how hard anyone would try."

If they could be met, Dean said, in a critical low water year the cost could run \$1.56 billion and reduce the river's power production by 2,200 megawatts, or enough power for two cities the size of Seattle. Even the minimum flows, again in a low water year, could drop 450 megawatts of power and cost between \$117 million and \$138 million, Dean said.

While the BPA cost figures are a gauge, other officials caution they may be high. For example, during a high water year, such as this one, the Columbia's hydro

system produces more power than is needed by the region's utilities or can be sold as surplus to California, meaning water is spilled over the dams. The spilled water can be used to help downstream migration at minimal added cost.

When Congress passed the Northwest Power Act, it thrust the Council into the role of mediator for many long-standing economic and social questions. The fisheries issue is no different; in fact, it is pivotal to the Council's energy plan. When and where water is stored for irrigation and power, when and where it is released, how the dams operate in relation

At a glance: 6 key fisheries goals

When federal, state, and tribal fisheries agencies submitted their recommendations to the Northwest Power Planning Council last year, the groups outlined six objectives that were the foundation for the scores of recommendations they did make. The objectives give a quick thumbnail sketch of what the fisheries experts feel are some of the major problems for salmon and steelhead traveling up and down the Columbia River system.

1. Juvenile Survival

One of the major problems along the Columbia and Snake Rivers is simply getting the young fingerlings downstream and out to the ocean after they have been hatched. The fisheries group said there were three primary causes of death among the salmon and steelhead fingerlings — delay of migration downstream because the current in the river is too slow, death caused by passing the small fish through the power turbines of the various dams, and finally predation from other fish such as the squawfish or from hovering birds such as seagulls.

To help the juveniles downstream, the fisheries people wanted minimum stream flows established, screens or by-pass facilities at the various dams to guide fish around the power turbines, and some control measures exercised to stop predators.

2. Adult Survival

The fisheries people are also concerned about making sure that adult

salmon and steelhead make their way back to their original spawning grounds along the Columbia and Snake. To accomplish this, the agencies recommended improving adult passage over the dams on both rivers, adopting certain flow requirements for both rivers, and improving the operation and maintenance of fish ladders at the various dams.

3. Natural Production

The fisheries agencies said a major problem caused by the hydro-electric system is the destruction of countless acres of natural spawning grounds for the salmon and steelhead. The agencies are seeking to have those remaining natural spawning grounds improved so that more fish, from a wider variety of species, are produced, including attempts to revitalize some natural grounds, such as those along the Yakima River.

4. Hatchery Production

Historically, the hatcheries along the Columbia and Snake Rivers have been used to compensate for some of the lost habitat and damage to the fish runs caused by the hydro-electric system. The fisheries people would like to see additional hatcheries and development of "low-capital salmon and steelhead production facilities" which could be used to augment the natural fish runs.

5. River Management

If fish are to be accorded the co-equal status Congress intended, the fisheries groups say, management of the river system will have to be improved and coordinated more carefully. Fisheries experts argue that traditionally salmon and steelhead have received second priority over operation of the river as a power resource. The fisheries agencies propose a more coordinated power planning and river management system between themselves and traditional power interests, including the Bonneville Power Administration, the Army Corps of Engineers, and the Bureau of Reclamation.

6. Fisheries Interest Representation

While power planning and management should be coordinated more carefully between power and fisheries interests, the various fisheries parties said they also recognize that it is important to better understand the rivers' operation for power production and the various interlocking agreements that govern the power system.

To improve the coordinated management, the fisheries groups proposed establishing a formal review process for all fish-related decisions made by the three major power agencies. In order to support this, the groups recommended the addition of three positions to help coordinate the rivers' management to benefit both fish and power.

Inverted rates nixed in Idaho

In response to a legislatively mandated moratorium, the Idaho Public Utility Commission has scrapped its inverted rate structure for most of the state's private utility residential customers and reverted to a flat rate schedule.

The action, which came after lengthy debate in the state legislature, could mean that nearly 75 percent of Idaho Power's residential customers will see a net increase in their electric bills, the regulatory panel says.

This winter the legislature passed a two year ban on inverted rates imposed by the Idaho PUC. Critics of inverted rates said that the Idaho PUC was trying to "dabble in social engineering" with adoption of the stair step rate schedule. The PUC had adopted inverted rates in October 1981, saying that the inverted rate structure would encourage residential conservation and help make ratepayers aware of the added costs of new power generation.

Under the new flat-rate schedule, all electricity will be sold at 3.675 cents per kilowatt hour.

Consumers using more than 1,730 kilowatt hours monthly will be paying progressively less for electricity. Consumers using less than 1,730 kilowatt hours monthly will be paying a higher amount than under the previous inverted rate schedule.

The inverted rate ban does not apply to Washington



Troutdale tour: Bill Campbell of Reynolds Metals (left) discusses the Troutdale aluminum plant's operation with Oregon Council Member Alfred Hampson.

Water Power residential customers in Northern Idaho. A number of other private utilities in the Northwest are also using inverted rate structures.

Tentative resolve reached in Alumax suit

A suit challenging the Bonneville Power Administration's power sales contract with Alumax Pacific Corporation has been tentatively settled out of court. Under the agreement, the suit will be delayed until BPA's final forecast this summer, and then dismissed if BPA can meet Alumax's power needs with-

out acquiring major new thermal or hydro power which could hurt fish and wildlife. In addition, BPA agreed to analyze the impacts on BPA rates of serving the Alumax load.

The plaintiffs in the suit are the National Wildlife Federation, the Washington State Sportsmen's Council, the Rose City Ratepayers Association, and three individuals. The defendant is the Bonneville Power Administration, with Alumax Pacific Corporation as intervenor on BPA's side.

The suit, filed last fall, charged that BPA violated the Pacific Northwest Electric Power Planning and Conservation Act and the National Environmental Policy Act when it offered Alumax a 20-year contract for 320 megawatts of power.

The plaintiffs said BPA did not prove, as the Northwest Power Act requires, that it would have sufficient resources to meet the Alumax load. They also said that BPA did not comply with the Act's requirements for public involvement, and that the federal agency should have filed an environmental impact statement on the Alumax contract.

NW community conference to be held

"Options Northwest: Local Responses to Global Challenges" is the title of a conference to be held June 17-20 at Evergreen State College in Olympia, Washington. Dan Evans, chairman of the Northwest Power Planning Council, Stephanie Mills, assistant editor of *CoEvolution Quarterly*, and Karl Hess, writer and activist, will speak at the conference.

The conference focuses on community issues in the Pacific Northwest, including energy, agriculture, peace, job development, values, and coalition building. Discussion sessions on these topics will be held, as well as skill-building workshops in organizing, fundraising, running effective meetings, political campaigns, managing volunteers, and other practical skills. For more information, contact the Evergreen State College at (206) 866-6001.

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July, 1982

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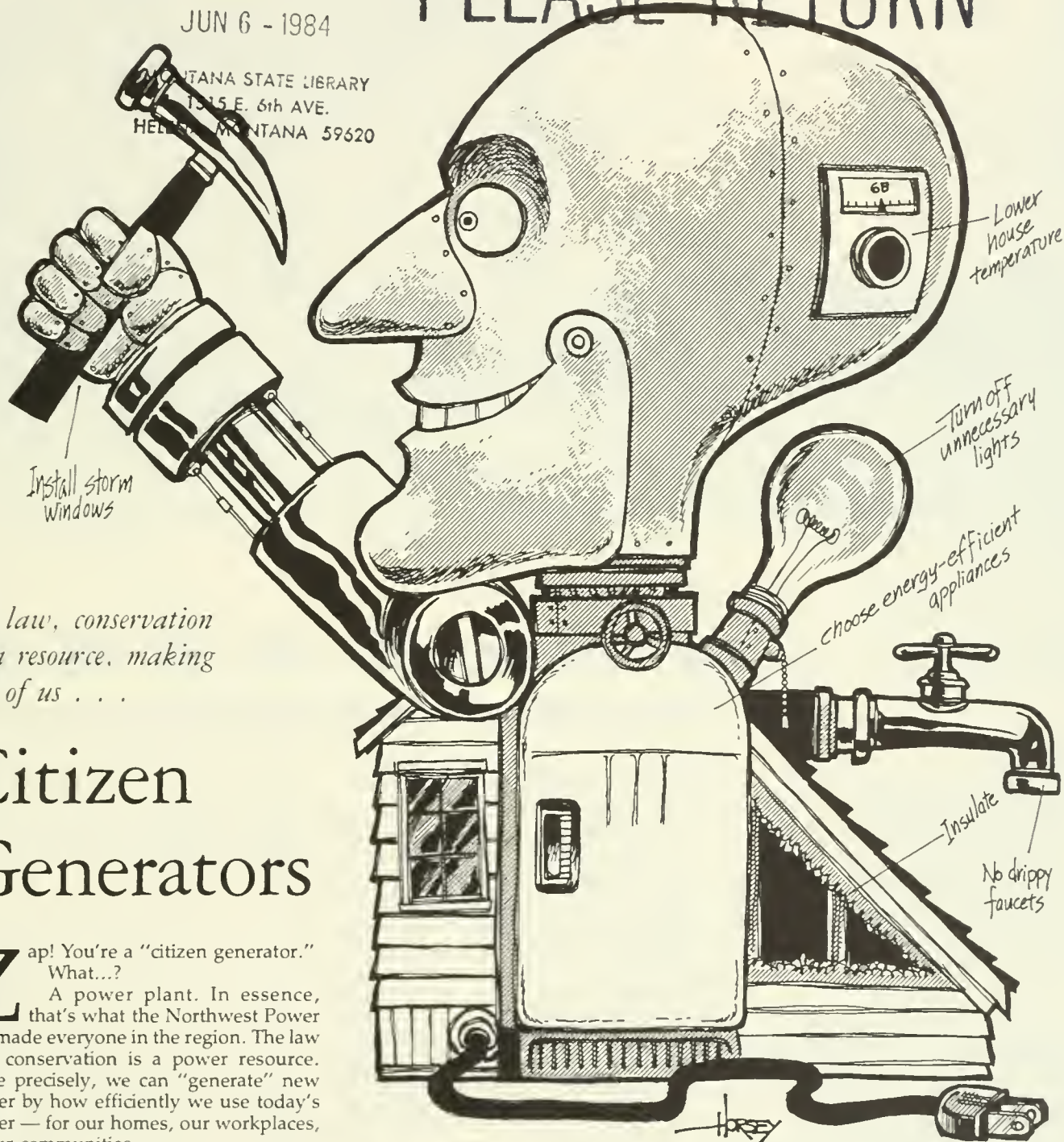
Install storm windows

*By law, conservation
is a resource, making
all of us . . .*

Citizen Generators

LA power plant. In essence, that's what the Northwest Power Act made everyone in the region. The law said conservation is a power resource. More precisely, we can "generate" new power by how efficiently we use today's power — for our homes, our workplaces, in our communities.

"The Act clearly establishes conserva-
(Turn to page 7)





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NORTHWEST ENERGY NEWS

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The Northwest Power Planning Council was established to plan, for the Bonneville Power Administration, the region's electric energy future, emphasizing cost-effective conservation and renewable resources

NOTICES

Council announces July 21-22 meeting agenda

The agenda for the Northwest Power Planning Council's July 21-22 meeting will include draft reports on contractor work in forecasting, conservation and resource assessment, model rate design, and quantification of environmental costs and benefits. The meeting will be held at the Hilton Hotel in Portland.

the Pacific Northwest in the last year and details what the Council has been doing to meet the April, 1983 deadline for adoption of its first 20-year forecast and energy plan.

It describes the Council's efforts to develop a fish and wildlife plan, its various contract work related to the energy plan, and its efforts to inform and involve the public in regional energy questions.

Copies of the report may be requested from Beata Teberg at the Council's central office.

Errata

In the May/June issue of Northwest Energy News, we reported that the Douglas County Public Utility District spends about \$300,000 annually, or two percent of \$15 million revenues, on fisheries measures for the Mid-Columbia dam. Douglas PUD officials say that figure was only for the operation and maintenance of the fish facilities. The PUD officials say the utility actually spends in excess of 10 percent of annual revenues for the debt service on the fish facilities and their operation.

Council seeks comment on annual report

Under the Northwest Power Act, the Northwest Power Planning Council is required to submit an annual report to Congress. The 1982 draft annual report is now available for public review and comment.

The report describes what has happened with electrical energy planning in

CALENDAR

July 13, Conservation Subcommittee Meeting (SSAC), 9:30 a.m., Council Central Office, Portland.

July 15, Reserves and Reliability Subcommittee Meeting (SSAC), 9:00 a.m., Council Central Office, Portland.

July 15, Resource Assessment Subcommittee Meeting (SSAC), 10:00 a.m., Council Central Office, Portland.

July 16, Fish and Wildlife Subcommittee Meeting (SSAC), 8:30 a.m., Council Central Office, Portland.

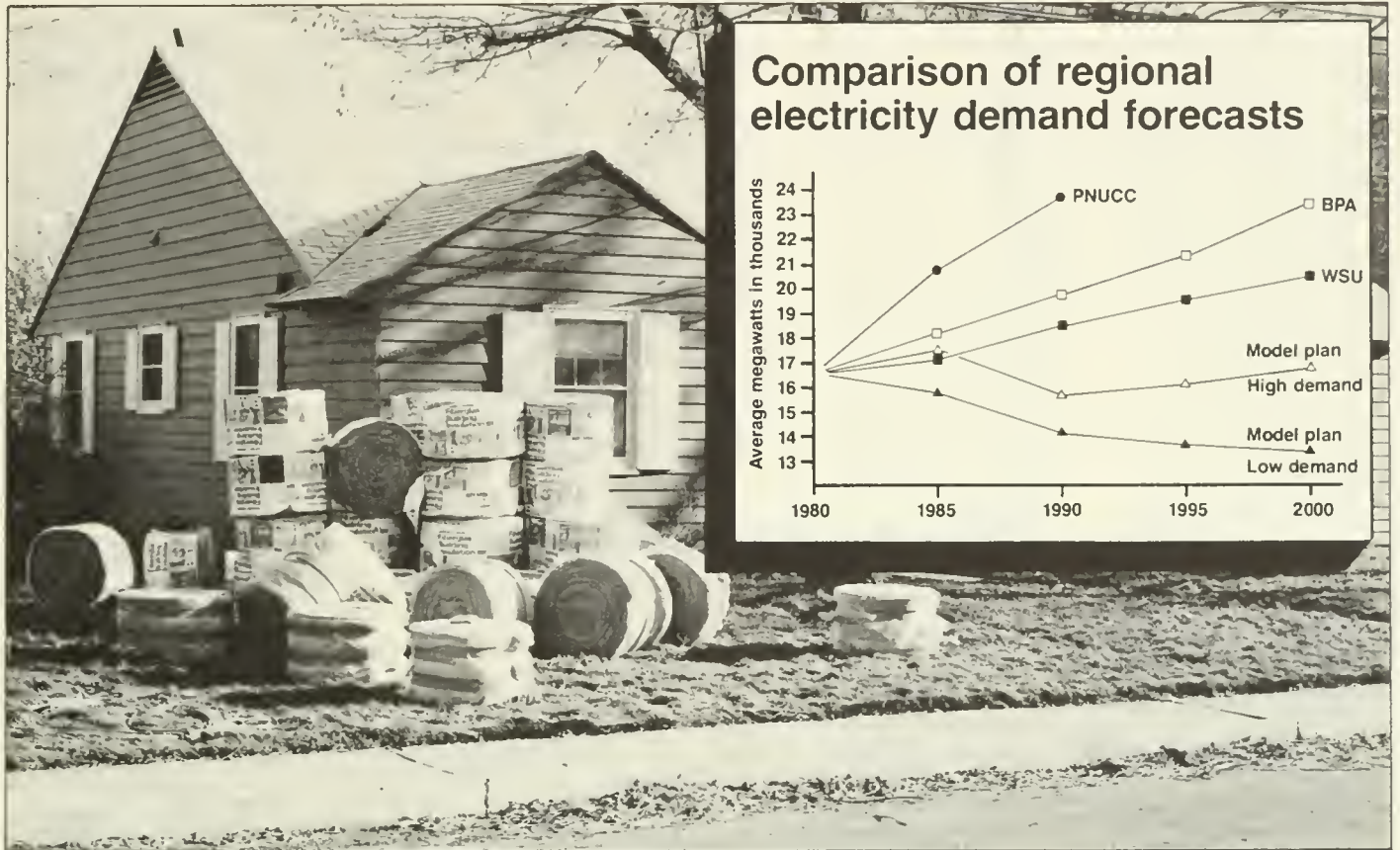
July 20, Conservation Subcommittee Meeting (SSAC), 2:00 p.m., Council Central Office, Portland. Optional meeting to hear presentation by Module VI contractor.

July 21, Forecasting Subcommittee Meeting (SSAC), 9:00 a.m., Council Central Office, Portland.

July 21-22, Council Meeting, 9:00 a.m., Hilton Hotel, Portland.

JULY

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A fiberglass future: Under the Northwest Conservation Act Coalition proposal, residential conservation would be a key to providing the region with new energy.

Coalition pushes for aggressive conservation

Region could defer new coal, nuclear plants if hydro used efficiently

Aggressive electric conservation could put thousands of Northwesterners back to work and save the region's consumers the cost of building any additional coal or nuclear plants, according to a proposal by a coalition of citizen groups.

"This is a picture of what the region could do, how aggressive we could be in applying the new authorities and tools of the Northwest Power Act," said Mark Reis, Director of the Northwest Conservation Act Coalition.

"The plan is not a forecast of what the future will be; it

is a blueprint of what the future could be."

The proposed "model" plan, presented to the Northwest Power Planning Council last month, calls for the development of comprehensive conservation packages for the residential, commercial, agricultural, and industrial sectors.

In the residential sector, the Coalition's plan calls for door-to-door energy audits directed toward increasing ceiling, floor, wall, and water heater insulation; sealing air leaks around windows and doors; and adding more effi-

cient heating systems for general space and water heating.

"On average, households participating in the model plan program should realize reductions in electricity needs of about 50 percent. In some instances, savings will exceed 75 percent," said Ralph Cavanagh, one of the principal architects of the plan developed by the Natural Resources Defense Council, a San Francisco-based environmental group.

Cavanagh told the Council that the average cost for the residential sector savings

would be less than 3.5 cents per kilowatt hours. In addition, standards set for new home construction could bring the total annual electric use down to 2 kilowatt hours per square foot, or roughly 3000 kilowatt hours annually for an average 1500 square foot home, Cavanagh added.

Washington Council member Charles Collins, however, cautioned the Coalition that they might be overly optimistic about the savings from conservation.

"The tone to the plan is that there is no uncertainty about conservation," said

Collins. "The results to date are disappointing. We're having shortfalls of up to 50 percent in projected savings from conservation steps."

In response, Cavanagh said most Northwest utility conservation programs have been "modest" to date and that even within the Coalition's "model" plan rather conservative estimates are made about the effectiveness and benefits of conservation.

One way to provide greater certainty about the actual benefits of conservation, Cavanagh said, would be for the federal Bonneville Power Administration to approve a demonstration community conservation program proposed by Pacific Power & Light for Hood River, Oregon. Under the PP&L proposal, the utility would go door-to-door with an aggressive conservation program, designed around some targeted steps to provide a more accurate reading of what are the savings from specific conservation measures. The Coalition says that nearly all the measures it has proposed are included in the PP&L pilot project.

In the commercial sector, Cavanagh suggested that the Council, BPA, and the region's utilities focus on improving lighting, cooling, and space and water heating. "We assume that 15 percent savings can be achieved, on average, through measures that will pay for themselves in reduced electricity bills in two years or less," said Cavanagh.

The industrial sector, once fueled by cheap electricity, could also substantially benefit from energy efficiency efforts, according to the coalition's plan. "The region's industries will cut back on electricity consumption — either through curtailment or through efficiency improvement. The model plan seeks to promote the latter course as the only viable route to expand production and employment in the industrial sector," said Cavanagh.

By increasing efficiency in mechanical drive, production of process heat, electrolysis, and lighting, "the industrial

Forecasts of regional electricity use Figures in annual average megawatts					
	PNUCC ¹	BPA ²	WSU ³	Model Plan: High Demand Scenario	Model Plan: Low Demand Scenario
1985	20,765	18,120	17,120	17,300	15,700
1990	23,834	19,624	18,410	15,600	14,100
1995	not available	21,350	19,510	16,100	13,600
2000	not available	23,333	20,490	16,800	13,400

¹From Pacific Northwest Utilities Conference Committee, *Northwest Regional Forecast of Power Loads and Resources: July 1981-June 1992*.
²From Bonneville Power Administration, *Forecasts of Electricity Consumption in the Pacific Northwest* (April 1982).
³From Washington Energy Research Center/Washington State University, Final Report to the Washington State Legislature, *Independent Review of WNP-4 and 5* (1982) (Table A-15) (Projected loads, assuming termination of WPPSS Units 4 and 5, "moderate demand growth," and "moderate conservation and renewables").

sector can maintain the highest 20-year growth rates envisioned in the most optimistic current utility forecast and still reduce total electricity needs by 14 percent compared to 1980 levels," according to the Coalition.

In the agricultural sector, improving the efficiency of water pumping and irrigation could reduce electricity demand by 17 percent while still allowing for expansion in irrigated acreage, Cavanagh said.

With vigorous conservation efforts, said Cavanagh, the region could hold its total demand for power by the year 2000 to nearly the same level, 16,000 average megawatts, as in 1980. In addition, under the Coalition's proposal 13 coal and nuclear plants now under construction or proposed could be deferred indefinitely, leaving the region only to complete Valmy Unit II in Nevada, Colstrip Unit III in Montana and Washington Public Power Supply System Unit II in Washington. Nevertheless, Cavanagh said this would still provide the region with "a generous margin of safety" to ensure adequate electricity supplies for economic growth.

"This future will come about," said Reis, "only if

the region decides to choose its energy future, rather than waiting for that future to befall us."

The Coalition is made up a variety of environmental, citizen, and labor groups throughout the four Northwest states of Washington, Oregon, Idaho, and Montana.

BPA conservation programs launched; some criticized

Last December, a year after Congress set the Bonneville Power Administration on a new course to pursue conservation, some Congressmen wrote Administrator Peter Johnson to express their frustration with the federal agency's progress.

"Members of the Subcommittee," wrote Chairman Richard Ottinger of New York and Washington's Al Swift and Oregon's Ron Wyden, "believe that BPA's implementation of the conservation and renewable resource acquisition

priorities has been unduly cautious and slow. One cause of the problem appears to be bureaucratic inertia in the face of new responsibilities."

The letter reflected two pivotal things about BPA's operation under the Northwest Power Act of 1980: first, the law had dramatically changed the agency from solely a marketer of electricity to a marketer and conservator of it; second, from Congressmen to various citizen activities, there was concern about the speed with which the federal agency was carrying out the mandates of the Act.

The Northwest Power Act directs BPA to develop all "cost-effective" conservation as the first priority for meeting the region's power needs, giving second priority to the renewable resources of wind, water, and the sun, third priority to co-generation and highly fuel efficient resources, and final priority to conventional resources such as coal and nuclear plants.

BPA's Johnson says the agency has been admittedly cautious; not wanting to waste money on unproven or unneeded resources. Further, Johnson says the agency, given its own forecast which indicates the region may have a power surplus to the end of the decade, needs to be cautious that ratepayers don't end up paying more for electricity than they have to.

In the present fiscal year, which ends September 30, BPA is to spend \$96 million for conservation, with another \$252 million to be spent in fiscal year 1983. The agency's conservation programs are directed toward the residential, commercial, and industrial sectors and toward helping state and local governments with implementation of the law. Contracts have been issued in all but the industrial sector. The programs include:

Residential weatherization. This program includes installation of insulation, storm doors, storm windows, and weatherstripping. Forty-five utilities have signed contracts for this program.

Following completion of a home energy audit, the homeowner is offered weath-

erization measures which the audit indicated are cost-effective.

Under the program, utilities have two financing options: 1) no-interest, deferred-payment loans for home owners; or 2) conservation "buy back," which is a one-time cash payment from BPA to the participating utility based on estimated kilowatt hour savings as a result of weatherization. BPA estimates that this program will result in a saving of 174 mw by FY 1987 at an estimated cost of 19.9 mills per kilowatt hour (kwh).

Shower flow restrictors. This program is designed to increase energy savings by more efficient use of hot water for showers. BPA reimburses the 84 utilities participating in this program for distributing the restrictors. As of May 1982, 1,028,311 shower flow restrictors had been mailed. BPA estimates that 12 kwh will be saved in 1982 with a total of 21 mw by 1987 at an estimated cost of 2 mills per kwh.

Commercial conservation. The goal is to increase the electrical efficiency of commercial buildings, which consume about 20 percent of the region's electricity.

This program, offered last September, is designed to reduce the amount of electricity used by commercial institu-

tions for lighting and water heating through installation of shower flow restrictors, water heater wraps, and replacement of fluorescent lamps with a more energy-efficient lamp. Under the program, BPA reimburses the 43 participating utilities for installation of conservation measures. For FY 1982, BPA estimates an energy savings of 9 mw and 32 mw by FY 1987, at an estimated cost of 5.1 mills per kwh.

Street and area lighting program. This program reimburses the 69 participating utilities for replacing existing mercury vapor fluorescent or incandescent systems with energy-efficient high-pressure sodium lights. The program will be expanded to include low-pressure luminaries. To date, more than 12,000 light conversions have been made at an estimated cost of 2 mills per kwh. BPA estimates that an energy savings of 3 mw will be realized in FY 1982, increasing to 33 mw by 1987.

BPA has approved other programs but no contracts have been offered to utilities. These programs include: industrial technology exchange seminars, institutional buildings programs, utility sector studies to encourage increased energy efficiency in existing utility transmission and distribution systems, and low-

income weatherization.

One of the most controversial of BPA's approved programs is the low-income weatherization program. BPA began soliciting proposals for operation of this program in April 1981. The agency has held a number of meetings with low income groups, community action agencies, and state energy offices. To date, no final program design has been developed. One of the major problems BPA is facing with this program is determining how the program should be delivered, whether through community action agencies, state energy offices, local governments, or utilities. While BPA makes up its mind, frustration increases. On April 27, Oregon Governor Atiyeh wrote to BPA Administrator Peter Johnson expressing his frustration about BPA's failure to implement a low-income weatherization program.

"More than a year ago I wrote to the then Acting Administrator of the Bonneville Power Administration offering the assistance and expertise of the state of Oregon in rapidly achieving cost-effective conservation in homes of low-income Oregonians. . . . Again, Peter, I ask, can I help you? We stand ready to work with you to get a low-income weatherization program in

place by the end of the summer."

There are those who think BPA has done everything possible to expedite conservation programs.

John MacLeod, from Snohomish County PUD and head of the Northwest Public Power Association's Steering Committee which negotiates contracts with BPA, says there is "no validity to the argument that BPA is not expediting implementation of conservation programs. I don't know how BPA could have moved faster."

BPA cost proposal draws utility fire

A Bonneville Power Administration conservation payment proposal has some Northwest utilities wondering whether it will even be worth getting involved with the federal agency's regional conservation programs.

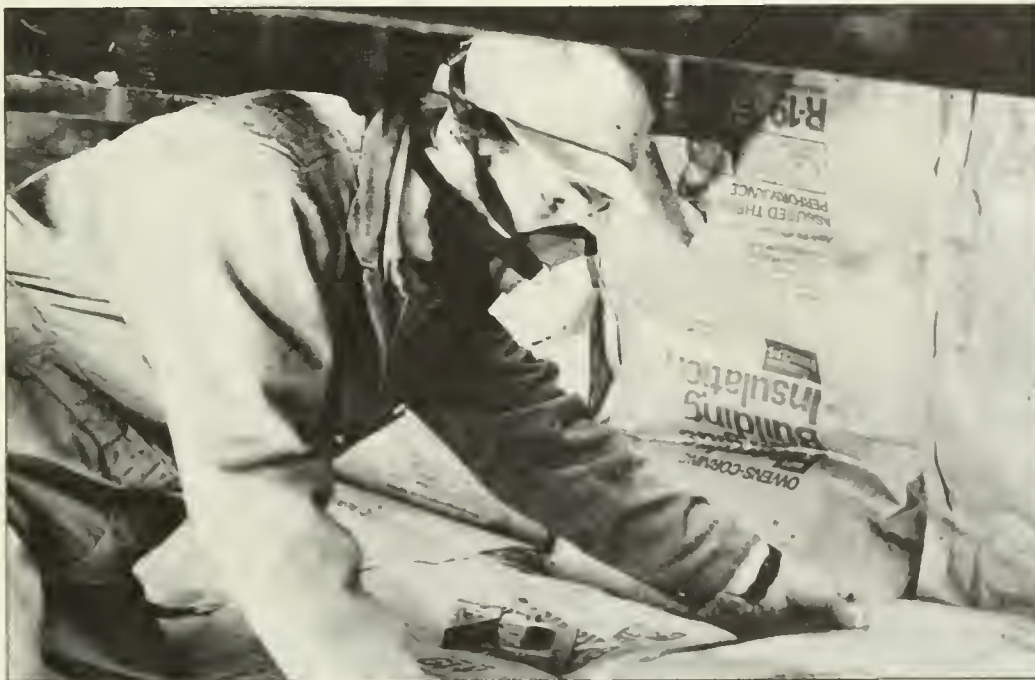
The proposal, included in the present BPA rate case, would place the majority of costs of conservation programs developed for regional benefit solely on those utilities which made the energy saving effort.

The proposal is "fatally flawed" and could work as an actual disincentive to conservation, says Charles Collins, Washington member of the Northwest Power Planning Council.

Under the proposal, if BPA offered a regional conservation program costing 30 mills per kilowatt, utilities using the program would be paid the 30 mill figure, but then charged the cost of the program less 5 mills, or 25 mills.

Because comprehensive conservation programs often reduce the utilities' overall kilowatt sales, some utilities argue that under the BPA proposal they would actually end up losing money because they would have declining sales while shouldering the majority of the costs of any conservation program.

At issue is who will pay for



Tacking down conservation: BPA programs are coming on line — but some say too slowly.

regional conservation programs and whether BPA's cost allocation method may actually thwart regional conservation rather than encourage it. And beyond the conflict between various utilities is the question whether the region's ratepayers will receive the full benefit of regional conservation programs as envisioned by the Northwest Power Act passed by Congress in 1980.

The cost allocation question has cut across a number of traditional utility lines, dividing utilities which generate some or all of their own from those which are totally dependent on the federal power marketing agency.

Utilities which generate most of their own power, such as Seattle City Light and the Eugene Water and Electric Board, have urged BPA to spread the conservation cost evenly to all BPA sales.

Non-generating utilities

argue, however, that without BPA's proposal or a similar one, they pick up a disproportionate share of regional conservation costs.

Under the generating utilities' proposal, a utility which receives all of its power from BPA would pay more in total dollars for BPA conservation than a utility which receives only part of its power from BPA — even though both utilities would pay the same amount per kilowatt hour for the cost of BPA's conservation programs.

Without the BPA proposal, a utility which reduced the amount of power it received from BPA could reach the point where it was paying little or nothing for BPA conservation programs in which it participated.

BPA has argued that without the provision, utilities which don't conserve will be penalized by having to pick up the

tab for those utilities which do.

In recent weeks, various utilities have been meeting privately hoping to work out some type of compromise proposal to offer BPA. The federal agency is presently reviewing the cost allocation scheme, and BPA Administrator Peter Johnson is scheduled to make a decision on it some time later this year.

Initiative 394 struck down; ruling to be appealed

The fate of the Washington Public Power Supply System's beleaguered nuclear program

took another jarring turn when United States District Judge Jack Tanner ruled June 29 that Washington's Initiative 394 was unconstitutional.

Tanner said the initiative, passed last November, violated the constitutional protection against states passing law which unduly impair existing contracts.

The judge, however, said he would delay the effective date of his ruling until April 15, 1983, thus allowing the initiative to stand and for the various parties in the lawsuit to file appeals.

The lawsuit against the initiative was filed by three banks which serve as bond trustees for WPPSS Plants 1, 2, and 3. The banks are Illinois National Bank and Trust Company of Chicago, Seattle-First National Bank, and Morgan Guaranty Trust Company of New York.

The lawsuit sought to over-
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Court room victory: WPPSS bond backers win suit against Initiative 394, but the case is headed for appeal.



Jim Crisman photo

Citizen Generators...

(From page 1)

tion as the Number 1 priority for new energy. And that is precisely what it is," says Dan Evans, chairman of the Northwest Power Planning Council. "Energy efficiency really is an opportunity to wring out more kilowatts out of what has been already produced.

"Each household, inadequately insulated or wasting energy in a variety of ways, is equivalent to a miniature electric power plant. All we have to do to get more power is to do better insulation or do the kinds of things that wring more power out of that little generating station, and there are millions of them in the Northwest."

Citizen generators. Millions of them. Ready to quickly, and relatively inexpensively, "produce" new power for the region.

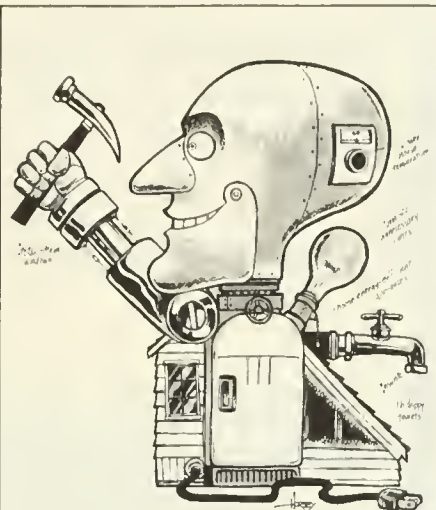
For citizens of Washington, Oregon, Idaho, and Montana, the Northwest Power Act, just as it did for coordinated electric power planning, has heralded a new, perhaps even pioneering, approach to conservation.

"For the first time in the history of the nation, conservation was to be considered as equivalent to a new source of energy," emphasizes Oregon Senator Mark Hatfield, one of the key sponsors of the law, passed in late 1980.

In fact, conservation is, by law, the region's first resource.

The law says the Council will plan for, and the federal Bonneville Power Administration will financially back, all "cost-effective" conservation measures and programs, giving conservation — because of traditionally different payback periods compared to conventional power plants — a 10 percent cost advantage over the next available resource. Under the law, that means BPA could fund a comprehensive conservation effort — such as wrapping water heaters — if it fell within 10 percent of the cost of building a new, conventional power plant, finally giving conservation equal standing with generating facilities.

But if the law says the Northwest must pursue conservation, what exactly is it that must be pursued? What are the benefits of conservation? Why is it important? What are some of the drawbacks, what works, what doesn't? And how do we "build" the power plant of conservation? These are the questions which the region's power planners and the general public —



About the cover

Several months ago, Seattle Deputy Mayor Bob Royer was talking about how to communicate the concept of conservation as a resource. "People are citizen generators," Royer mused, able to "generate" power by how efficiently they use power. But how can you illustrate the concept? We asked Dave Horsey, the highly acclaimed cartoonist-writer of *The Seattle Post-Intelligencer*, to put pen to paper. This month's *Northwest Energy News* unveils his comical characterization of the region's new power resource, the Citizen Generator.

which is an essential element and a potential resource — must address in the months ahead.

Everyone seems to have a definition of what conservation is. To some, it's the next best thing to motherhood and the All-American apple pie; to others it's just another Orwellian example of big government creeping into the lives of average citizens. The rhetoric aside, Daniel Yergin, co-author of the Harvard Business School's best seller, *Energy Future*, says conservation falls into basically three categories:

Curtailment — It might be best de-

scribed as simply doing without. Curtailment usually comes in response to some sudden, unforeseen interruption of energy supplies (such as the 1973 Arab oil embargo) and is carried out through a variety of measures from turning down your thermostat to rolling blackouts in your business or community. The Northwest has seen the effects of electric curtailment, perhaps most graphically in 1977 when an unseasonably low snowpack dropped the amount of water in the Columbia River for hydroelectric power production.

Social overhaul — This would encompass radically changing lifestyles to reduce energy consumption. It could come from, for example, laws forbidding construction of new single-family dwellings designed to force people to live in consolidated, supposedly more energy efficient settings.

Productive conservation — Instead of doing without or radically changing lifestyles, Yergin says there is a third form of conservation, and that is simply increasing the efficiency with which we use energy — getting more work out of each unit of energy. By increasing the level of efficiency, Yergin says, the nation could cut its use of energy (all forms) by 30 to 40 percent and "still enjoy the same or an even higher standard of living."

This third form, says Yergin, can come from a myriad of methods, methods often substantially cheaper for the amount of power "produced" than it would cost to generate power in a more conventional manner.

For households, it can include increasing insulation in your floors, walls, and ceilings and caulking windows to reduce heat loss, turning down water heaters, replacing old appliances with new, more efficient ones, or even something as simple as shutting drapes at night to keep heat inside. In the commercial sector, substantial savings can come from, for example, reprogramming a building's computer-operated air conditioning and heating system to run more efficiently. In *Energy Future*, Yergin notes one auto parts manufacturer who invested \$50,000 in energy savings measures and saved \$1.2 million annually in energy costs.

While productive conservation can score savings like this, its advocates say conservation is often taken to mean only

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'Electricity in the Northwest is getting expensive. Yesterday's cheap hydro is reaching its limits and being mixed with expensive new power from coal and nuclear plants.'

curtailment and receives too little attention regarding its potential in stretching present energy supplies.

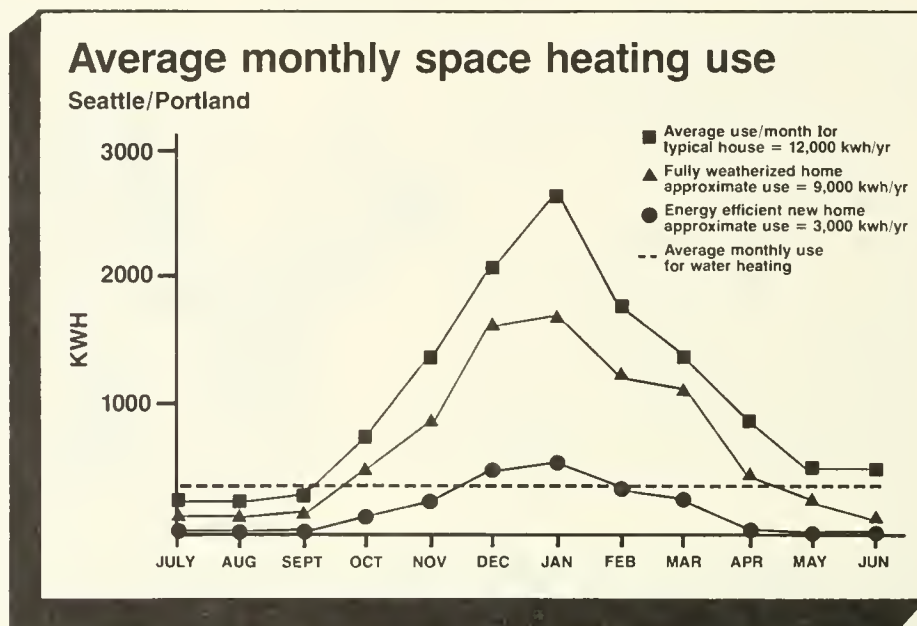
Regardless of past attention, conservation is bound, under the Northwest Power Act, to play an important role in the region's power future. And several factors bolster conservation's growing importance.

Perhaps the foremost is also the simplest: price. Electricity in the Pacific Northwest is getting expensive. Yesterday's cheap hydro, which has lit and warmed this region for decades, is reaching its limits, and is being mixed with expensive new power from coal and nuclear plants. If BPA's latest rate increase is approved, the federal agency's wholesale power cost will have jumped to nearly six times the 1979 level — from 0.3 cents a kilowatt to 1.8 cents.

The region has crossed, says Seattle Mayor Charles Royer, the thermal threshold. And that transition — from a cheap, largely hydro-based system to one using the river in combination with coal and nuclear power — has proven to be a costly change, driving retail rates upwards and causing consumers to rethink the value and importance of conservation.

In this land of cheap hydropower, the price of the new energy realities was felt first by the region's private utilities. Bumped off the BPA system because of legal preference given to public utilities, the private utilities turned to coal and nuclear in the inflation-driven 1970s, building new coal facilities in Washington, Oregon, and Montana, and the region's only commercial nuclear reactor, Trojan, in Oregon. Electric bills jumped; consumers responded. Some did the little things, like rope caulk around the windows; some did more extensive weatherization; and others decided to switch, heating their homes by wood stoves or other ways.

The region's public utilities were not immune to spiraling costs. The ballooning costs of the various Washington Public Power Supply System projects, some integrated into BPA's rates and others left with the individual utilities, started to show in the rates by 1979. That year alone the BPA rate to public utilities jumped 88 percent. And more double-digit increases



were on the way.

Yet, as inflation was sending power plant costs and rates skyward like a plume from Mount St. Helens, conservation was taking on another price-related dimension.

At less than a half cent a kilowatt, electricity from the Columbia's dams had been literally too cheap to save. Thanks to economies of scale and technological advancements, each new power plant had brought electricity on line cheaper than the previous one. To build more was to pay less. But the equation changed in the 1970s.

Each new power plant, whether hydro, coal, or nuclear, costs more than the previous one. Increasingly, utilities found it could be cheaper to find ways to stretch today's kilowatt to meet the needs of tomorrow's customer than to build another power plant. In California, for example, state energy officials pushed for standards to increase the efficiency of new water heaters because the value of the electricity saved was more than the cost of the new water tank.

So the price of power spurred consumers to save themselves money and encouraged utilities to wring more use out of existing kilowatts before building new — expensive — ones.

But the '70s saw another facet of conser-

vation's importance come forward.

The 1970s were unsettling times for utilities: the 1973 Arab oil embargo stamped "null and void" on all the industry's past rules. Where growth in electrical demand had once been a given — something you could plot on a piece of graph paper with a ruler — it became erratic, unpredictable. The balance between demand and supply teeter-tottered. This rocking sensation seemed to send more than one utility planner for the Roloids. Billions of dollars were at stake.

With inflation pushing the cost of new projects upward, higher costs meant higher rates, and higher rates meant people redoubled their efforts to squeeze more use out of each kilowatt. Environmental and safety-related regulatory changes meant the plants took longer to complete — up to 12 years from inception to completion — and the longer it took, thanks to inflation, the more it cost. It became a cycle. Higher costs. Higher rates. More conservation. Supplies fell out of balance with demand.

With so many plants delayed and over their original costs, utilities were racing to find some bridge between their present supplies and their projected needs.

Enter conservation. Conservation was something the utilities could develop quickly, in many cases at relatively low

cost, and reap immediate benefits. For consumers, low- or no-interest loan programs began to offer a chance to use some of the utility's money to save some of their own.

Conservation was on the road to becoming a resource, one which was flexible and could be developed incrementally as a hedge against a rapidly changing future.

Today, regional power planners are renewing interest in conservation.

"I think we are entering a period of great uncertainty," says the Council's Evans.

"To respond to these uncertainties, I think we have to prepare ourselves with a greater variety of resources." This variety should include conservation by more efficient use of electricity, says Evans. Where appropriate, we may want to consider switching to different energy sources, such as solar or natural gas for heating water, he says.

"These all represent resources because in each case it frees up kilowatts to be used for new needs," adds Evans.

Puget Power pushes commercial conservation grant program

Puget Sound Power & Light Company, in a commercial conservation financing program which is the first of its kind in the region, says many businesses seem anxious to find ways to save electricity — and save money.

Puget officials say 800 customers have already applied for the commercial financing program, with 250 jobs completed and another 300 underway.

Bob Bannister of Puget Power estimates that the 250 jobs completed so far have saved the utility 13 million kilowatt hours.

The potential of the program, now in its second year, is enormous, says Puget's Jerry Lehenbauer. He estimates that each of Puget's 55,000 commercial and industrial customers can save between 20 and 40 percent of the energy they now use.

Puget offers two types of financing for commercial conservation: a cash grant, which pays about 70 percent of costs at the time of installation; and a no-interest, 10-year deferred payment loan. Work is performed by contractors based on a Puget energy audit and financial proposal. Work can include weatherization, improved controls for heating and cooling equipment, and changes to indoor and outdoor lighting systems. Puget engineers inspect the completed job before issuing payment.

"There aren't answers for a lot of conservation questions," says Lehen-



Going commercial: Puget offers a program to encourage businesses to increase their electricity efficiency.

bauer. "Puget has been rather brave and decided to go ahead and see what happens. We're getting signals that we're doing good things and doing them right."

While conservation might be able to ease some of the looming planning uncertainties, it is not without its share of problems.

Some of the problems are technical, such as indoor air pollution from a tightly sealed house or how to precisely measure how much energy will be saved from a particular measure.

Yet many of the surrounding problems are institutional and public policy questions about how to develop comprehensive energy savings programs.

One difficulty is getting utilities and the public to focus on conservation, says Yergin. In an age of flashing multi-color video games with speeding space ships, most conservation steps — things like wrapping water heaters or weatherstripping a window — lack a certain technological pizzazz. Solving indoor air quality problems doesn't seem to hold the same challenge as designing a nuclear reactor. And the legions of utility engineers are more often trained to deal with the technical complexities of power generation than to tackle problems of power conservation.

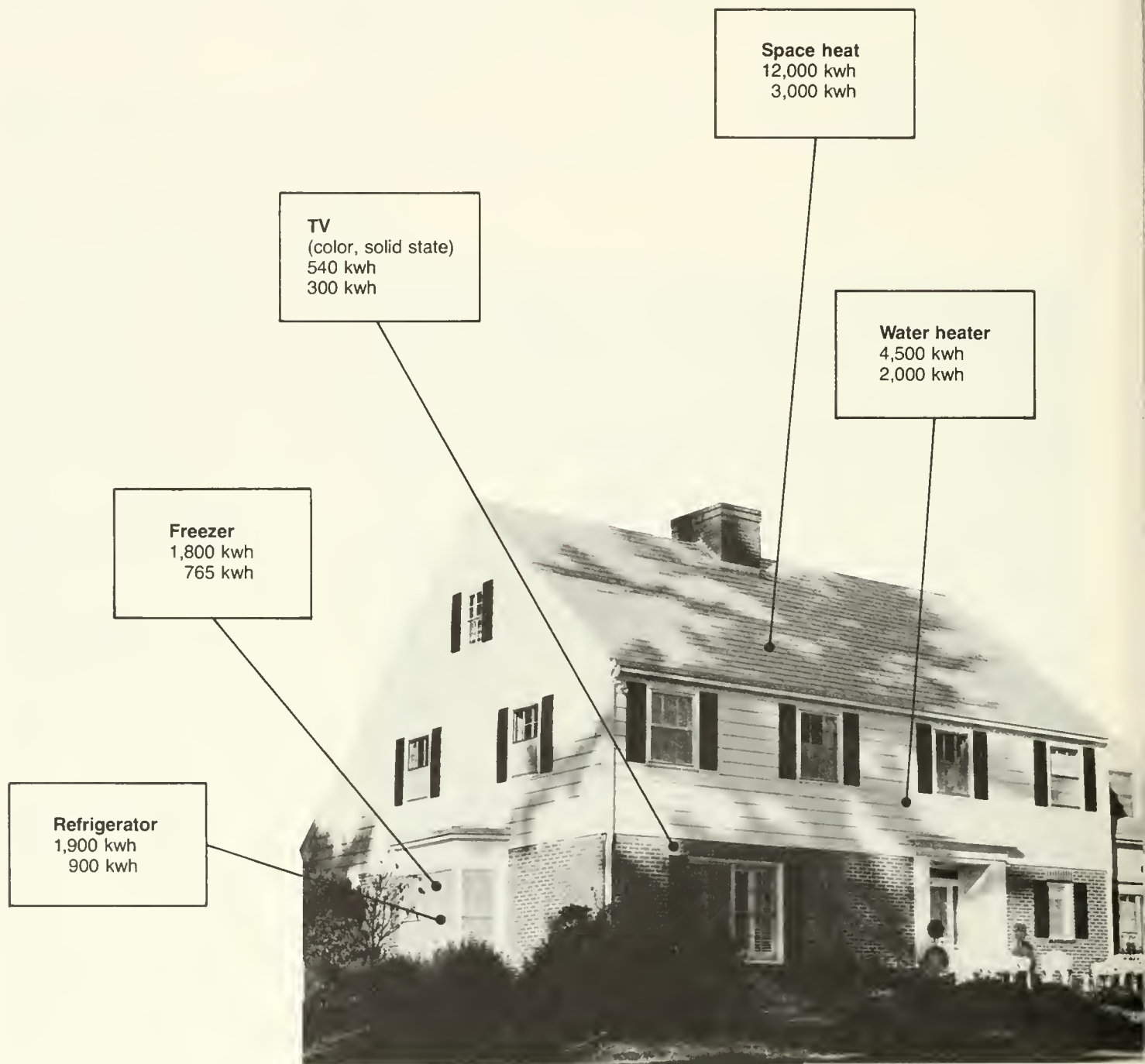
And if utilities have a natural leaning towards generation, the public may have a natural aversion to the context in which conservation is often presented. Energy efficiency measures tend to be marketed in a negative context, says Tom McGrath of the Seattle-King County Home Builders, noting the nickle-sized device commonly called a shower flow restrictor. Why not market the same device as a "high efficiency" shower head insert, McGrath suggests.

Another perception problem is the relationship of conservation to rates. Consumers often complain that even though they conserve electricity their power rates still go up. So why conserve? It's a dilemma facing many utilities, which have certain fixed costs (such as paying off loans for completed power plants) that must be covered no matter how many kilowatts are sold. If fewer kilowatts are sold, then the costs are spread over a smaller base. Nevertheless, conservation may still be cheaper than building a new — and expensive — power facility, which those who don't conserve and do conserve will pay for equally.

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Efficiency at home

How typical household appliances compare to most e



energy efficient ones

Washer
(incl. hot water)
960 kwh
540 kwh

Clothes Dryer
960 kwh
860 kwh



Does energy conservation mean one has to reduce one's standard of living, accept a lower-level lifestyle?

It doesn't have to, judging by energy-efficient products presently available to Northwest residents. In fact, people can cut their use of electricity 20 to over 50 percent and still enjoy the same level of convenience.

A good weatherization program that includes insulation, storm windows, and caulking and weatherstripping, for example, can cut the electric baseboard heat bill in a 1,500 square-foot home nearly one third. That could mean a saving of, say, \$16 per month, if that home cost about \$50 a month to heat.

If that home were built brand new according to established energy efficiency standards, the electric baseboard heat bill could be cut by up to 75 percent — down to \$12.50 a month from the current \$50.

Further savings are available in the form of new energy-efficient appliances. Super-efficient appliances are now available at most of the region's appliance dealers. The typical Pacific Northwest electric water heater today uses an average of 4,500 kilowatt hours of electricity a year. New electric water heaters now on the market, however, can use about 3,250 kwh a year, or about 30 percent less. An electric heat-pump water heater or a solar water heater can further reduce consumption down to 2,000 kwh per year.

Just as cars are getting more efficient, so are many typical appliances. Below are figures for appliances found in most homes.

The space heat figures are for a 1,500 square foot home with baseboard heat and a typical mix of appliances. Column one gives figures for the average number of kilowatt hours now consumed in the Northwest region. Column two shows reductions based upon an average of available energy efficient homes and appliances. Column three shows the *most efficient* home and appliances available.

Consumption in kilowatt hours per year

End Use	Current Regional Average ¹	Retrofit & Replacement Average ²	Most Efficient Available ³
Space heat	12,000	8,400	3,000
Water heater	4,500	3,250	2,000
Refrigerator	1,900	1,330	900
Freezer	1,800	1,140	765
Cooking	1,200	975	750
Washer (incl. hot water)	960	720	540
Clothes Dryer	960	860	860
Dishwasher (incl. hot water)	1,000	1,000	800
TV (color, solid state)	540	360	300
Lighting	1,000	1,000	800
Other	1,000	1,000	1,000
TOTALS	26,860	20,035	11,715

Note: Federal Trade Commission regulations require manufacturers to show rates of energy consumption (commonly in kwh) on appliances and in catalogs listing appliances. The "other" category above includes smaller, miscellaneous appliances such as toasters, hair dryers, and vacuum cleaners.

¹Source: Bonneville Power Administration, Pacific Power & Light, Portland General Electric.

²Source: Space heat and water heater figures from Puget Sound Power & Light and Seattle City Light. Appliance use figures from California Energy Commission and most recent Sears & Roebuck catalog.

³Source: Space heating use figure from Eugene Water & Electric Board. Other use figures from California Energy Commission and most recent Sears & Roebuck catalog.

'There are basically three approaches to developing conservation: a marketplace approach, a regulatory approach and a mixed approach. Each has its advantages – and its drawbacks.'

Beyond these barriers, however, is a heightening debate over how to develop "cost-effective" regional conservation programs as envisioned in the Northwest Power Act. Basically, there are three approaches.

The first might best be described as a pure marketplace approach: price electricity, whether it comes from a dam built in the '40s or a nuclear plant built in the '80s, at the cost to produce a new kilowatt from a new power plant, whatever the type. In utility circles, this is called "marginal" or "incremental" cost pricing. It sends consumers an accurate marketplace signal about exactly what that new kilowatt of power will cost. Under this type of approach, consumers decide individually how to respond to the cost of electricity. Some may choose to increase the weatherization of their homes; other might switch, for example, to natural gas for heat and hot water. Others might settle for donning a sweater.

The marketplace approach, its advocates argue, leaves the decision on conservation with the individual, avoiding the creation of a cumbersome bureaucracy and encyclopedic books of regulations, and allowing inherent economic efficiencies of the marketplace to "pick" the appropriate level of conservation.

The market approach also has its problems, critics say. Some people may simply not have the money available to respond to the escalating power costs. A market approach doesn't address economic equity questions of the poor and the elderly. The approach also raises questions about how much conservation planners can count on; how many people will take a conservation step? How much electricity might be saved from these?

A second way to nail down regional conservation is through regulations. Regulations can spell out detailed steps to be taken, including levels of insulation, operating efficiencies of different appliances, building designs, or even specific industrial processes to be used to increase efficiency. Regulations provide a certainty: this amount of electricity will be saved from each house that meets this standard. They also provide a uniformity of compliance — if increased energy efficiency can provide more power for the region, then everyone should pass the same test.



Irrigation savings gain import down on the region's farms

Conservation programs are also reaping benefits for farming communities.

Depending on the crop grown, there are wide variations in soil types, electrical requirements, sprinkler system designs, and the amount of water required. But conservation is indeed taking place in rural farming communities.

"Surviving and making a living — that's what conservation used to be called," says Idaho Power Company's Agricultural Engineer Bill Berry, who has been helping farmers with irrigation problems for 30 years.

In 1980, Idaho Power began testing the energy efficiency of pump irrigation systems, checking more than 200 systems in southern Idaho. The company takes a "holistic approach" to irrigation monitoring, testing motors, pumps, valves, water flow, and sprinkler lines to determine the efficiency of the total system.

On the average, Idaho Power found the irrigation systems operating at 65 percent efficiency, which is very good, according to Berry. An inefficient system, for example, 50 percent on a 100

horsepower unit, could be costing the irrigator as much as \$2000 a year.

This year, the company intends to test at least 500 irrigation systems. The service is available to all irrigator customers.

Farmers are usually receptive to conservation suggestions, Berry said, though they are often skeptical that they are wasting as much energy as Idaho Power tests indicate. Once convinced of the kilowatt hour and monetary savings they could realize, "they are tickled pink," he adds.

Berry feels that part of the key to the success of the utility's irrigation program has been that consumers are charged for a portion of the Idaho Power service. The company charges \$50 to check each pump and \$100 a day for large multiple pump systems. This induces the farmer to get involved since he has a direct financial stake in the conservation effort, Berry says.

"It's not hard to convince farmers to conserve if your word is believable," Berry says. "They want to save money."

But regulations have their drawbacks. Strict regulations, by their nature, are ordering someone to do something, and risk raising public ire over things like "mandatory conservation." Regulations can put conservation in a negative context. In addition, regulations necessitate enforcement — and that means new government inspectors to make sure everyone is complying with the regulations. Inspectors create paperwork, and inspectors and paperwork cost money — money which might be better spent on measures that actually save energy.

A third approach is mixing the advantages of both the marketplace and regulatory strategies while attempting to cut down the disadvantages.

The first step might be to price electricity closer to what it actually costs to produce a new kilowatt, such as an "inverted" rate, where the more electricity you use the more per kilowatt you pay. This provides consumers with the marketplace message.

The second component could be some regulations, but regulations designed to set efficiency targets instead of reams of rules on insulation thickness, rope caulking

type, and other details. This would set predictable standards while allowing flexibility in meeting them and encouraging marketplace forces to find the cheapest way of meeting them.

The third facet, bringing together the marketplace and the regulations, might be simply marketing. Pacific Power & Light, a Portland-based private utility, has proposed such a test marketing program for the community of Hood River, Oregon. Under the proposal, PP&L would develop model conservation packages for homes

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California standards aimed at appliance efficiency

California's Building and Appliance Standards are among the nation's most aggressive and successful in promoting energy efficiency.

In 1976, the California Energy Commission established an energy code for new buildings. Those code provisions governing residences have been revised recently, and on June 13 tough new standards took effect. According to Bill Huston, manager of the Commission's Technical Analysis Section for Appliance Standards Development, the new residential efficiency standards will result in homes that consume 50 percent less energy than those built before 1975.

The standards are tailored to 16 separate climate zones which divide California with a general energy performance standard set for each zone. Huston said the Fresno zone — with hot summers and relatively cold winters — offers a useful example. There, a home may not use more than 12.4K BTU per square foot per year for heating, 23K BTU per square foot per year for cooling, and no more than 20,400K BTU per housing unit for hot water.

To meet these standards, a builder or designer may choose one of three methods for compliance: a certified computer calculation of the design, adhering to detailed standards (includ-



ing specifications for passive solar, super insulation, and domestic hot water), or a point system. The point system assigns both positive and negative points for design, types of equipment, and their efficiency.

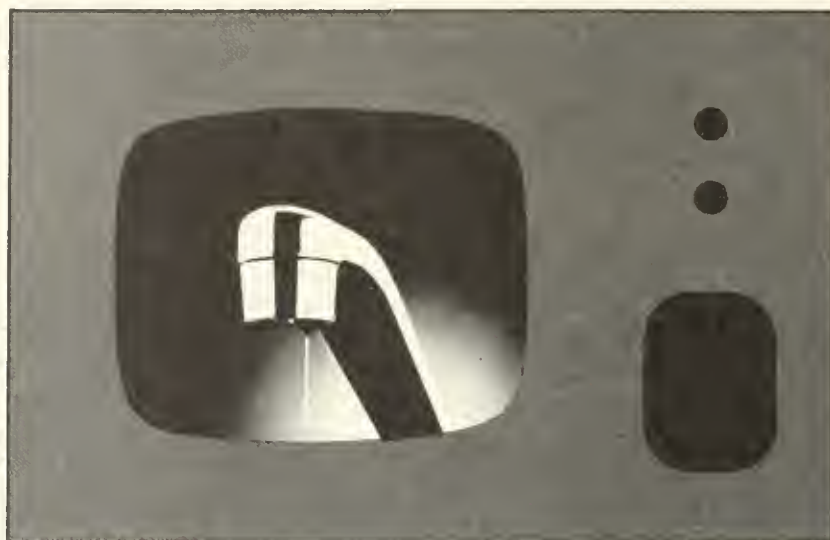
Huston said the commission's first energy code for non-residential buildings, set in 1978, aimed to clean up the most common inefficiencies in building shells and mechanical systems. This code is being updated. In two years, the first non-residential energy code revisions for four of 21 building types

will take effect. These will include tighter "U" values restricting the escape of heat through walls, prescriptive efficiency and size values for heating, ventilating, and air conditioning (HVAC) systems, and new lighting and light-switching standards.

The commission also has tough residential appliance standards for room air conditioners, central air conditioners, furnaces, insulation, electric water heaters, refrigerator-freezers, and shower heads.

Huston said a new electric water heater, under the new California energy efficiency standards, will save 780 kilowatt hours (kwh) a year. At 9 cents a kwh, that will mean a saving of \$702 over its 10-year life. A new refrigerator-freezer under the standard will save 300 kwh a year, and about \$400 over its 15-year life, based upon a rate of 9 cents per kwh.

The U.S. Department of Energy has changed federal policy on requiring appliance manufacturers to set and place energy efficiency ratings on their products. Huston said under draft regulations prepared by the U.S. Department of Energy, states like California would have to obtain a waiver from the federal government in order to continue with their own appliance efficiency standards.



Little things: Pacific Power has directed recent efforts towards getting people to take the little conservation steps, such as fixing dripping faucets, and other inexpensive steps (below).

Selling home conservation

NW utilities find in peddling programs, it's the dollar that counts

As utilities in the Pacific Northwest are finding out, the problems with conservation are often more human than technical. And one of the human problems is simply how you get people to take advantage of the conservation programs that are already available.

Perhaps the most aggressive example of selling conservation comes from the Portland-based private utility, Pacific Power & Light Company.

"We had a strong belief it was cost-effective and, in turn, would have a benefit for our customers," says Jack Vogel, Director of Communications for PP&L. In the early '70s, Pacific Power, responding to the energy shock of the 1973 OPEC oil embargo, began retooling itself to more aggressively pursue conservation throughout its service area in six western states.

One of the keys to Pacific's pursuit of conservation was a stepped-up advertising program developed by The Pihas, Schmidt, Westerdahl Company which recently won a national award for excellence.

"We geared the ads toward the cus-

tomers," says Vogel. "In every ad the customer had to do something," such as ask for an energy audit or pick up a free pamphlet describing the steps consumers could take. One pamphlet, for example, outlines 20 things consumers can do for under \$20 to save energy in their homes.

Jerry Parks, an advertising executive with PSW, said research done by the firm showed most people had done the major weatherization tasks — such as

installing added insulation or storm windows. Most folks, however, hadn't done the little things, say Parks.

Armed with that information, PSW designed a campaign for Pacific Power aimed at getting people to fix leaky faucets, wrap water heaters, install new shower heads, and a host of other small tasks.

Some of the advertising was done on television, because of Pacific's widely scattered service area, and other advertising was done in local newspapers, even providing people with hand-drawn instructions on how to take certain conservation steps.

Parks said public response was encouraging. After the campaign ran in Lincoln City, Oregon, the Pacific office there received more requests for energy audit, in four weeks than it had received in the previous year, Parks noted.

The key to getting people to take advantage of utility conservation programs, says Parks, is a very simple self-interested one: Conservation saves money.



Conservation is going to cost money. Region-wide programs could easily run into the millions. 'We're getting into new programs that aren't really cheap,' says one utility official.

(From page 13)

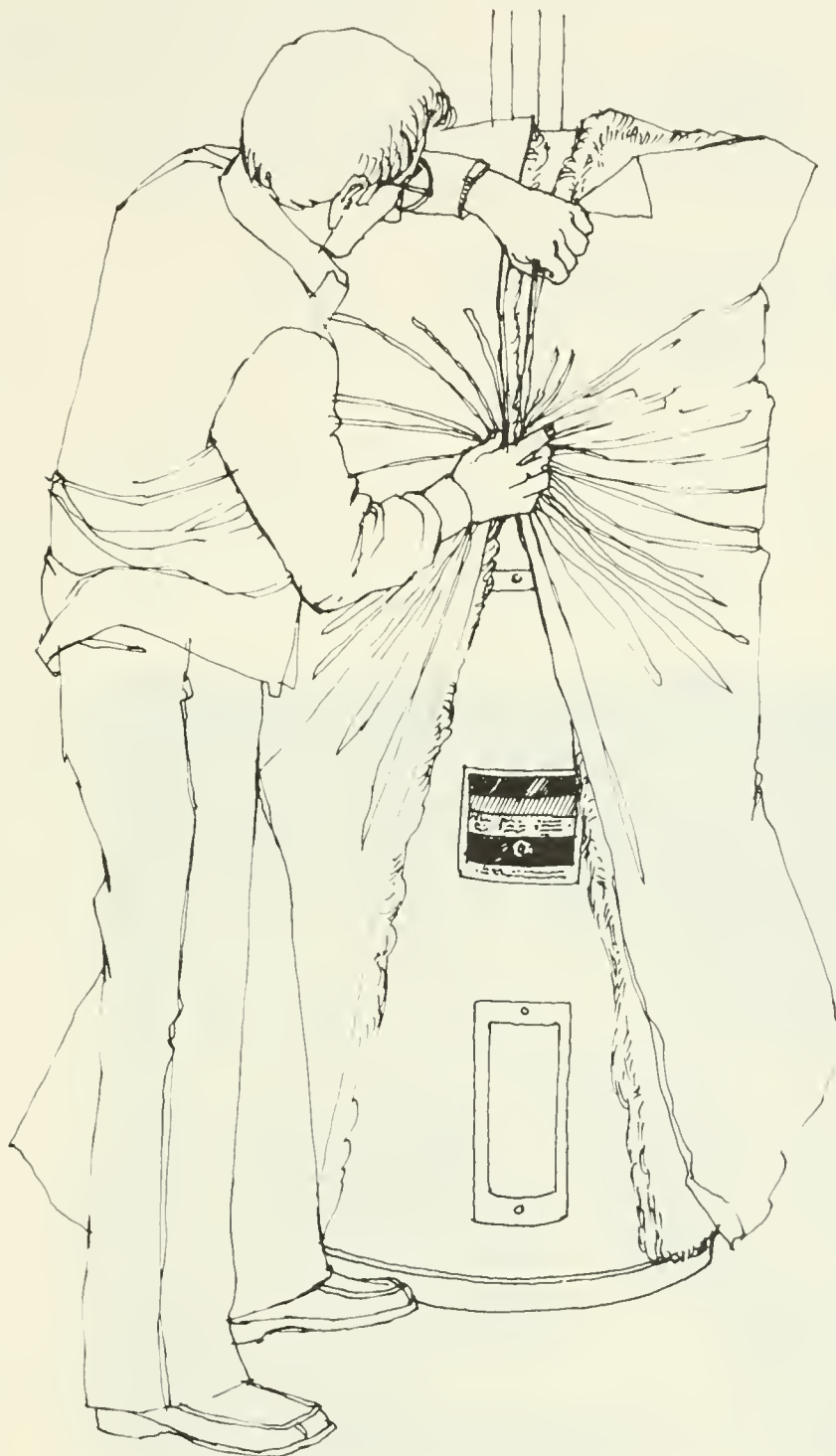
and businesses, designed to get the most "cost-effective" conservation from each, and would go door-to-door, offering the program at no cost, then placing the cost of the program into BPA's wholesale rates — just as if it was a conventional power plant.

The fourth element could be incentives. For example, because of the higher initial cost, a builder might be hesitant to spend money for higher insulation levels and more efficient appliances. The energy-efficient house would risk costing more than the inefficient house. But what if BPA provided an incentive to bring the cost of the energy-efficient house down to the same level as an inefficient home? The region saves because present power supplies are stretched a bit farther, the builder has a more energy-efficient home to sell, and the homebuyer gets a dwelling that uses energy efficiently and saves the homeowner money.

Still, even a mixture of marketplace and regulatory approaches isn't a panacea to the region's energy woes and the problems of conservation.

Conservation, if to be developed as a resource, is going to cost money. Region-wide programs could easily run into the millions.

"We're getting into



new programs that aren't really cheap," says Ed Holt, a conservation planner with Seattle City Light. In turn, says Holt, the city's massive municipally-owned utility is looking at what it has done and how to tailor programs for the next generation of conservation efforts.

Some utility officials say projected energy savings are coming in lower — in some cases, 50 percent lower — than originally estimated, changing equations about what conservation measures are cost-effective and what aren't.

In addition, power agencies — from the federal BPA to the smallest rural cooperative — are wrestling with the ramifications of conservation: its effects on revenues to pay the bills, its role in rapidly changing energy forecasts, its relationship to operations of the hydroelectric system, and its political acceptance in a period when some forecasts project the region having a power surplus into the late 1980s.

"Some people say conservation is the easiest, simplest, and cheapest way to get power. It isn't easy. It isn't simple. And it isn't cheap," says one energy analyst. "Its just that it is probably easier, simpler, and cheaper than any of the other options we have."

What do you think about conservation?

The Northwest Power Planning Council would like to hear your views on conservation. The Council will need to answer some important questions about conservation in the region in the process of making a regional energy plan. What do *you* think is the best way to get energy savings from conservation? For example, should there be strict standards for conservation? Should there be incentives, or payments, for energy-saving actions? Should electricity rate structures be used to encourage conservation?

A sampling of comments on energy conservation will be printed in a later edition of *Northwest Energy News*. Please send comments to:

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Initiative 394

(From page 6)

turn the initiative, which requires voter approval of bond sales for large-scale, publicly financed energy projects. Under the ballot measure, approved by 58 percent of the Washington electorate, voters in the service areas of the 23 WPPSS member utilities would have to approve any further bond sales.

Tanner said the initiative's provisions violated Article 1, Section 10 of the United States Constitution, which prohibits states from passing laws which impinge or abridge existing contracts unless it is reasonable and necessary.

Tanner specifically ruled the initiative unconstitutional as it related to the first three WPPSS plants, upon which \$6 billion has been already spent and which are at stages of completion ranging from 90 percent to slightly more than 50 percent.

The judge's delay of his ruling meant the Supply System would still have to continue an initiative-mandated cost-effectiveness study needed before another bond offer could be placed on the ballot in February.

Meanwhile, as the banks, the State of Washington, and the initiative's backers, Don't Bankrupt Washington, sorted out the ramifications of the ruling, they agreed on one thing: Judge Tanner's courtroom wasn't the last courtroom in which Initiative 394 would be argued.

The decision will now be appealed to the U.S. Ninth Circuit Court of Appeals.

Small hydro earns money for Oregon couple

A retired Oregon couple has turned their concerns over rising electric rates into a profitable business.

Donald and Bessie Ridenour decided that Parsons Creek, which flows the length of their property, had the potential to generate electric energy. They went into business and have become the sixth Pacific Power small farm or residential customer in the Northwest to own and operate their own hydroelectric plant.

Capable of producing a maximum of 9 kilowatts and built at a cost of \$53,000 — plus a few headaches — the plant could earn the Ridenours \$273 a month, depending on stream flow.

Ridenour says recognizing a potential hydroelectric site and deciding to develop it is easy. Paper work, licensing, obtaining all the state and federal water rights and permits to build a dam, and then getting a working design for a turbine

is not. After several attempts to use a simple water wheel ended in failure, they had a small turbine designed and built.

Water diverted by a 20-foot long, six-foot high dam is carried to the powerhouse located downstream of the Ridenours' home by a buried 600-foot long pipe. The Ridenour dam also has a fish ladder to permit fish to pass on upstream.

Consumer panels submit proposals to Puget Power

Puget Sound Power & Light Company's five Consumer Panels have submitted their 31 recommendations on building codes and conservation standards to the utility for review and response.

The Consumer Panels have been working since February to determine the most appropriate course of action for developing, adopting, and enforcing energy conservation standards and codes for new

and existing structures.

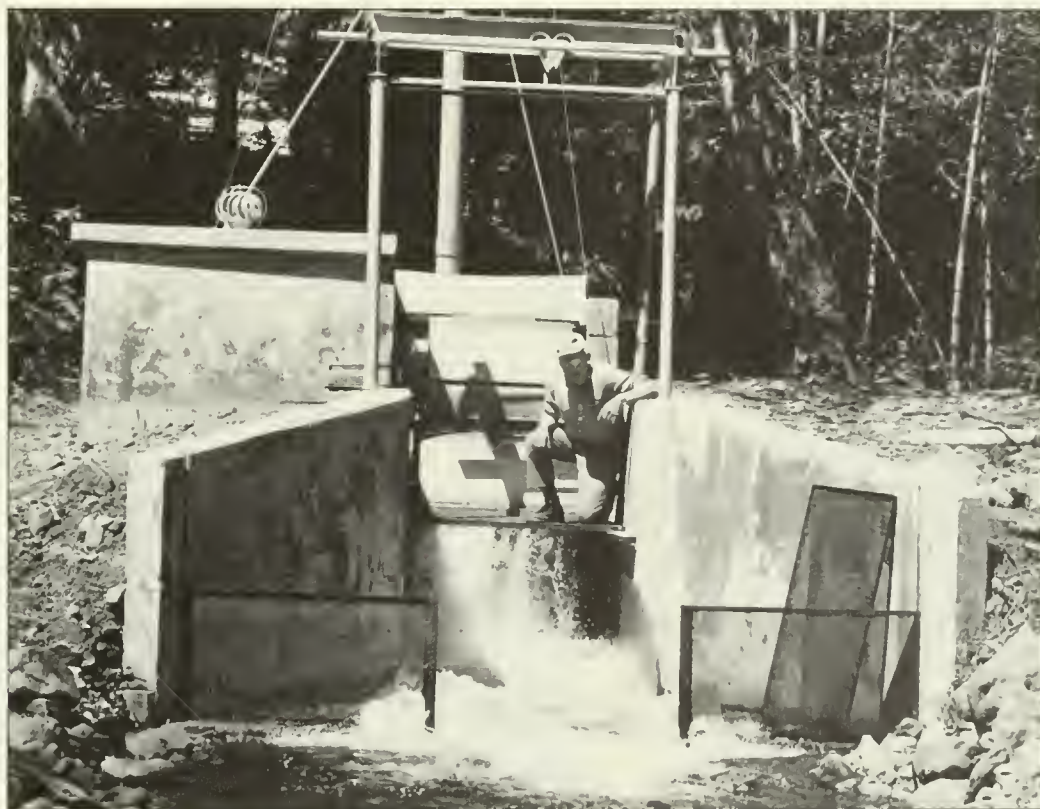
Puget Power President John W. Ellis will review the recommendations with his management team and provide a response later this summer.

"The recommendations will be used as a resource in the preparation of our recommendations to the Regional Power Planning Council," Ellis said.

The Panels' recommendations to Puget Power include:

- Enforcement of the Washington State Energy Code for new residential and commercial buildings and all remodeling portions of existing structures.
- Adoption of an energy conservation code for existing structures.
- Setting rates to control excessive electricity use.
- Rating buildings for their electricity consumption in the same way cars are rated for gasoline mileage.
- Rigid enforcement of any energy codes adopted.

The Consumer Panels consist of 30 to 40 consumers, representing a variety of interests within Puget Power's nine-county service area.



Small scale hydro: Parsons Creek project pays dividends to Oregon couple.

Conservation programs achieve big savings

Home, commercial efforts save both dollars and energy

Energy conservation programs in the Pacific Northwest are beginning to produce some rather impressive numbers. Once viewed with skepticism, cost-effective conservation programs are now off the planning table and on line:

Eighty-five percent of the water heaters in Idaho Power's service area have been wrapped with insulation blankets.

The City of Portland's commercial-industrial program is helping business to confront rising energy costs. One business will save \$20,000 the first year on a \$400 investment.

Seattle City Light is wrapping water heaters using a non-profit vocational rehabilitation firm.

The City of Eugene and its local public utility are working together to initiate a sweeping residential weatherization program.

These are some of the best examples of how the citizens, businesses, and public policy makers are responding to the "new realities" in the Northwest's electric energy scene. They suggest the types of successes available to those who are serious about conserving electricity.

EUGENE. Home of the University of Oregon and the state's largest public electric utility, the Eugene Water and Electric Board (EWEB), the City of Eugene kicked off its mandatory residential weatherization program in January. Early returns are impressive: 337 completed and paid for residential weatherization projects, over 3,000 audits with most resulting in weatherization work now in various stages of progress.

The mandatory weatherization program, patterned after one considered in Seattle, was adopted by the Eugene City Council February 9, 1981. The program is voluntary until January 1, 1985. Seven weatherization measures must be satisfied for single-family homes through fourplexes built prior to 1974, when an insulation requirement took effect.

The seven measures are:

1. R-30 attic insulation in buildings not insulated greater than R-11;
2. Attic ventilation;
3. R-19 floor insulation over uninsulated crawl spaces;

4. Six-millimeter vapor barriers on the ground of the crawl space;

5. R-11 insulation/joint sealing of accessible ducts in unheated spaces;

6. R-11 insulation of residential water heaters; and

7. Caulking and weatherstripping of exterior windows/door frames.

Once the work is completed to satisfy these requirements, an inspection paid for by EWEB is made and then the dwelling is certified. Triggering the program during the mandatory period will be changes in utility service. The requirements are embodied in the Eugene Housing Code. Penalty for noncompliance is a maximum fine of \$500.

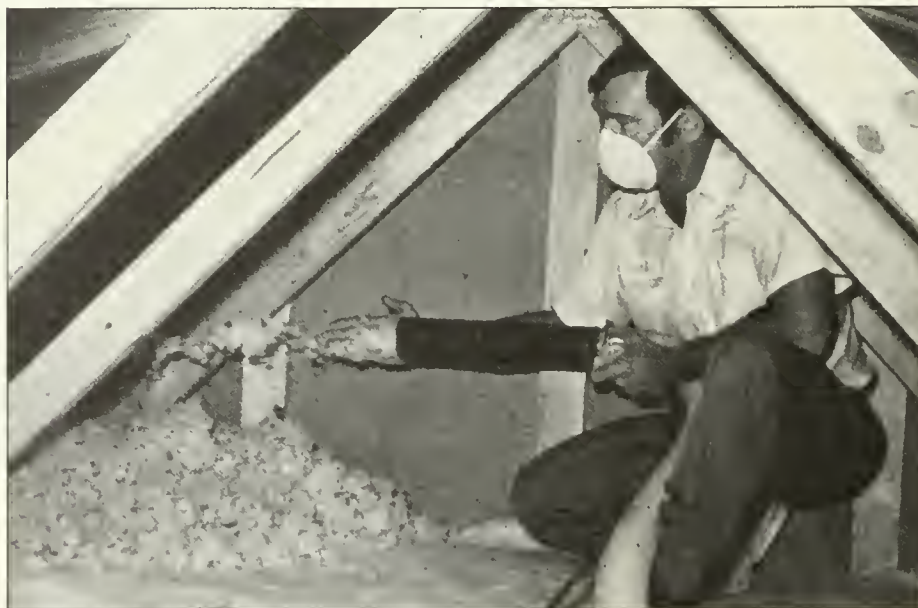
Greg Page, Energy Program Director for the city, said that during 1984, financing, the indoor air quality issue, and the supply and price of energy will be reviewed by the City Council to determine whether to continue or amend the effective date of mandatory enforcement of the program. "Our hope," said Jean Reeder, director of EWEB's energy conservation programs, "is that most people will have followed up on weatherization work so that the mandatory element will not be necessary."

Reeder said City of Eugene residents may gain financing help for weatherization work either through BPA's buy-back program or from EWEB itself. The buy-back program, she said, pays 29.2 cents for each kilowatt hour saved during the first year. This covers about 80 percent of most weatherization costs, she said.

Financing for oil heat and natural gas heat customers can be financed through a State of Oregon loan program.

IDAHO POWER. Headquartered in Boise, Idaho Power may hold the Northwest's record for insulating electric water heaters. Close to 142,000 residential and some 11,000 commercial water heaters have been wrapped with insulation blankets. That's about 85 percent of the water heaters in the investor-owned utility's service area. Idaho Power estimates a savings of 600 kwh per wrap, for a total of 91,800,000 kwh, and all since 1980.

Darlene Standahl, an assistant researcher in the IP energy management division, said the program's success had to overcome initial fears by some customers who were concerned about the safety of the water heater insulation blankets. No problems have developed,



Blowing in savings: EWEB's residential weatherization program provides audits, financing.

however, she said.

Similar results have been achieved in the company's fledgling residential weatherization program, according to Cal Bowen, Idaho Power's conservation director. Started just last year, the utility provides interest-free loans to finance the installation of weatherization materials. A total of \$6.4 million in loans have been made and 5,800 weatherization jobs completed, yielding a to-date savings of about 22 million kwh.

Bowen attributes the success of the water heater wrap and weatherization programs to use of qualified, private sector contractors.

"When it comes to conservation, you get the job done by utilizing the forces out there in the community that sell the products so they have an economic incentive to go after the prospects," Bowen said. He observed that relatively low electric rates still haven't produced enough independent conservation action. But enthusiasm for conservation is generated by the contractors because they have an incentive to get the business. About 140 contractors are helping Idaho Power carry out its weatherization program, he said.

PORTLAND. The citizen-business based Energy Policy Project won City Council approval in August, 1979, and has been going great guns since. The project called for establishment of a



Delighted: Elizabeth Nickerson of the Portland Energy Saving Center awards Stephen Yaw for producing perhaps the most energy-efficient hamburger in the city.



nonprofit public corporation to carry out the project's public sector responsibilities. The result is Portland Energy Conservation, Inc., governed by a five-member board. This body oversees management of The Energy Savings Center.

"We really emphasize the public-private partnership," says Jeanne McCormick, City of Portland Energy Officer. "The center serves as a catalyst for private action."

Key to the city's commercial-industrial energy program is the case-management approach, where energy use is analyzed on a business-by-business basis and recommendations are tailored to each specific application, what McCormick calls a kind of "cradle-to-grave approach."

Using a \$3 million grant from the U.S. Department of Housing and Urban Development, and \$15 million from private lenders, the Center makes one-year, deferred-payment low-cost loans for two types of audits. If the firm audited follows up on all the recommended energy saving investments found cost-effective in the audit, the loan is forgiven.

The two types of audits, reports Center manager Mitzi Scott, are a maintenance and operations audit listing savings with a one-year payback and a capital investment audit identifying intermediate and long-term savings. The

center maintains a list of 40 approved private architects and engineers who provide the actual audits. The center's (public/private) funds may only be used for the audits, she said. The cost of the energy saving investments must be made by the business owner. The results can be spectacular.

One Portland businessman parlayed a smallish \$400 investment into an annual \$20,000 saving. Last year, Stephen Yaw, owner of Portland's famous Hollywood neighborhood eatery, asked the Center for help in his attempt to bring down energy costs. Energy costs were about \$60,000 a year with additional boiler maintenance costs nearing \$20,000. From the Center's list of approved auditors, Yaw selected Zanders, Billings & Associates. The firm recommended changes in operation of air-conditioners, boilers and, eventually, replacement of the boilers with a geothermal heat pump to recycle water from a well which now supplies water for the restaurant's air-conditioning system — water the restaurateur now pays \$400 a month to dispose in the Portland sewer system.

The audit cost \$4,100. It will be paid by the Portland Energy Savings Center because Yaw carried through on the recommendations.

Last winter, Yaw told Portland restaurant operators that his annual energy bill had been cut to \$40,000. His January oil bill, typically \$5,000 to \$6,000,



Tightening up: Contractor installs storm door as part of Idaho Power's weatherization program.



Dual benefits: Seattle's water heater wrap program helps both homeowners and needy citizens.

was only \$2,850.

The Energy Saving Center also makes loans to owners of residential property, regardless of the type of fuel used for heat. One important aspect of Portland's energy policy is that it promotes conservation of all forms of energy.

SEATTLE. It's called "Blanket Seattle." Its purpose is wrapping 50,000 electric water heaters in a nine-month period, ending in September. They'll make that — and more: help for some 30 adults with severe mental disabilities and training for Asian refugees struggling to adjust to a new country.

"It's going extremely well," said Bill Isabell, Special Projects Director for Conbella, a sheltered (non-profit) workshop for adults with mental disabilities. Isabell led the effort to win a Seattle City Light contract for installation of 37,000 R-10 water heater blankets under a program the utility had

contracted for with BPA. Conbella already did business with the City of Seattle, collecting waste paper for its recycling operation. In the water heater wrap proposal, Isabell suggested using community and civic groups to install the blankets. City Light liked the idea.

Beginning last December, Conbella sought other groups to participate, among them MetroCenter YMCA. "It was a wonderful strategy," says Arliss Stewart, one of the people who contributed to shaping the program. Stewart and MetroCenter got a subcontract to install 9,300 blankets in the West Seattle neighborhood. "We hired students at South Seattle Central Community College and students at Seattle Opportunity Industrial Center," said Stewart. "We felt they needed part-time work and the money to help pay tuition."

MetroCenter, working through the West Seattle Chamber of Commerce,

signed up the West Seattle Kiwanis, the West Seattle Football Association, and the Fauntleroy Environmental Association. Ten refugees from Southeast Asia were recruited for training; seven finished and got blanket installation work.

With all these secondary social benefits, will the program save energy and money? Judy Aranda, who manages the project for City Light, provided the following figures: BPA pays City Light \$32 for each blanket installed to BPA specifications. These include wrapping the water heater and setting back the thermostat to 130 degrees. The blanket and set-back service is free to the resident, who will save an estimated \$14 to \$16 a year on the electric bill for heating water.

According to Aranda, the completed Blanket Seattle program will save City Light and BPA 3 megawatts, enough to serve about 1,400 all-electric homes. Aranda said the "saved" electricity will mean a cost avoidance (of investment to produce an equal amount of new electricity) of about \$7 million.

Of the \$32 City Light gets from BPA for each blanket, Conbella is paid \$31.16, including sales tax, to cover its costs and pay the installers. Conbella has been so successful that Isabell has asked Seattle City Light for authority to install an additional 7,500 blankets. If approved, Isabell said they could all be installed by the end of August. "They're well organized and responsive," Aranda said of the Conbella effort. "We've had very good cooperation from City Light," said Isabell.

Everyone wins: City Light and BPA get \$7 million worth of electricity for an investment of \$1.6 million; residents, for free, cut down on their water heating bill; and some nonprofit organizations and needy citizens can earn some money in the process.

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Northwest Power Planning Council

August, 1982

*After years of projected deficits,
the scales are tipping the other way*

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Weighing the New Surplus

The scales of power planning have shifted. Weighted for years by projections of too little power to meet anticipated demands, the scales now tilt toward too much. The Northwest is facing what one energy official describes as a possible "glut" of electricity.

If that's the case, it poses unexpected problems for

(Turn to page 7)



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The Northwest Power Planning Council is required to develop a
program to restore the Columbia's fisheries and a regional elec-
tric energy plan, to be carried out by the Bonneville Power Admin-
istration, emphasizing cost-effective conservation and renewable
resources.

Cover photo © Louis Bencze 1982

NOTICES

Council seeks mailing list additions

The Northwest Power Planning Council is in the process of revising and updating its mailing list. Members of the public who would like their names added to the list should contact Beata Teberg at the Council's central office, 1-800-547-0134 (in Oregon, call 222-5161 collect).

The mailing list is divided into several categories. Names on the general mailing list receive notices of Council meetings, the Council's monthly newsletter, *Northwest Energy News*, and other general information mailings. Minutes of Council meetings are mailed to names on a second list. There is also a separate list for those who would like to receive only the monthly newsletter.

The Scientific and Statistical Advisory Committee has public mailing lists for each subcommittee: Conservation, Resource Assessment, Forecasting, Fish and Wildlife, Reserves and Reliability, and the Executive Committee. Names on these lists receive meeting notices, agendas, and minutes for the particular subcommittee.

Solar conference to be held

The Solar Energy Association of Oregon will sponsor a regional conference September 30-October 2 in Portland. Workshops will address current institutional and commercial programs, the latest renewable energy technologies, and policies that are shaping future energy use in the Northwest. Particular attention will be given to the implementation of the conservation and renewable energy portions of the Northwest Power Act.

Featured speakers at the conference will include Ralph Cavanagh, author of the Natural Resource's Defense Council's "Northwest Model Power Plan;" Roy Hemmingway, a member of the Northwest Power Planning Council; Steve Hickok, Assistant Administrator of Conservation for the Bonneville Power Administration; and Randy Hardy, Director of the Pacific Northwest Utilities Conference Committee.

For more information, contact conference coordinator Nancy Cosper at RAIN, 2270 NW Irving, Portland, OR 97210, (503) 224-7238.

CALENDAR

August 20, Resource Assessment Subcommittee (SSAC), 10:00 a.m., Council offices, Portland.

August 20, Oregon Energy Facility Siting Council, 9:00 a.m., City Hall Council Chambers, Medford, Oregon.

August 26, Forecasting Subcommittee (SSAC), 9:00 a.m., Council offices, Portland.

September 1-2, Council meeting, Portland.

September 14, Conservation Subcommittee (SSAC), 9:30 a.m., Council offices, Portland.

September 15-16, Council meeting, location to be announced.

September 30-October 2, Solar Energy Association of Oregon regional conference, Portland State University, Portland.

October 1, Council final Annual Report available for public circulation.

October 18-19, PNUCC Model Input Workshop, Red Lion Inn/Jantzen Beach, Portland.



For the fish: The Northwest Power Planning Council hears a witness during a recent meeting previewing parts of a draft program to help save the Columbia's fish.

Council floats 'water budget' for fish

Plan would set aside block of water to aid fish downstream journey

The development of the dams along the Columbia and Snake Rivers has given man some degree of control over nature and provided us with years of cheap electricity. Yet, as the rivers have been altered and manipulated to garner the most power, something else has been traded: the once bountiful natural runs of salmon and steelhead.

Congress recognized the price nature paid for turning the Columbia River System into perhaps the world's largest renewable energy power machine. With passage of the Northwest Power Act of 1980, it

directed the new Northwest Power Planning Council to develop a program to "protect, mitigate, and enhance" the fish and wildlife along the once free-flowing Columbia. At the same time, the Council was to assure the region of "an adequate, efficient, economical and reliable power supply."

The task is not easy, for it requires a delicate balancing of the needs for power and the needs of the fish. The goal, as the law laid out, is how to use the river most efficiently for power and fish.

Since receiving more than 2,200 pages of recommenda-

tions for its fish and wildlife program last November, the Council has been working to achieve that balance. Last month, the four-state power planning panel unveiled one of the program's central components, a river management technique that budgets the Columbia's uses.

This water budgeting attempts to address one of the critical fisheries problems: adequate river flows to carry young fish past the dams and out to sea. For the salmon and steelhead — which begin their lives in the fresh water of the Columbia and Snake and spend

their adulthood in the salt water of the Pacific — the journey from the spawning grounds to the sea is critical. Once their biological clock starts, the fish have roughly a month to reach salt water — or they will never make it to sea.

But the harnessing of the Columbia for power production has greatly changed the natural flows that once carried the young fish seaward. The dams have turned the Columbia into a 1,200 mile long series of lakes, one lake flushing to another as water is released to spin power turbines. The Columbia no longer flows swiftly enough for

many fish to beat the biological clock. Reservoirs store spring runoff water to be used later in the year for power generation. The river flows have been adjusted to meet seasonal shifts in power demands.

To compensate for man's intervention, the various fisheries agencies and tribes wanted certain year-round river flow requirements. The proposed flows, however, would greatly reduce the power production ability of the dams and the refilling of the reservoirs. In succeeding years, the failure to refill the reservoirs would not only cut future power generation but also eliminate water available for fish flows.

Given the physical constraints of the hydro system, Council members concluded after discussions with fisheries experts that it was most important to have adequate river flows when the fish actually begin their downstream migration.

With that in mind, the Council has been discussing the concept of a water budget — allocating a specific amount of water to fisheries agencies and tribes to be used during the migration period for the benefit of the migrating juvenile fish (smolts). Under the concept, the fisheries agencies and tribes could use this block of water to increase the river flows during the critical migration period,

generally April 15 to June 15. A "water budget" would be established for both Priest Rapids Dam on the Columbia and Lower Granite Dam on the Snake, two key hydro facilities which would serve as checkpoints above the meeting point of the two rivers.

The water budget would be directly controlled by the fisheries and tribal officials, allowing them to specify the amount and schedule of flows during the migration period. This would allow the fisheries managers to increase the river flows when the greatest number of smolts appeared to be headed downstream. In addition, the water budget would be set aside regardless of the rivers' runoff conditions so that even in low-water years the block of water for the migrating fish would float atop the adjusted stream flows. This would aid fish survival even in periods of greatly reduced river flows.

Although the Council has not yet set the size of the water budget, Al Hampson, an Oregon Council member, says the concept has a number of advantages. First, it promotes the most efficient use of the river for the twin demands of power and fish, says Hampson. By setting aside water for when the young fish are headed downstream, it makes sure there are adequate flows without jeopardizing

refill of the reservoirs for future fish flows and power generation.

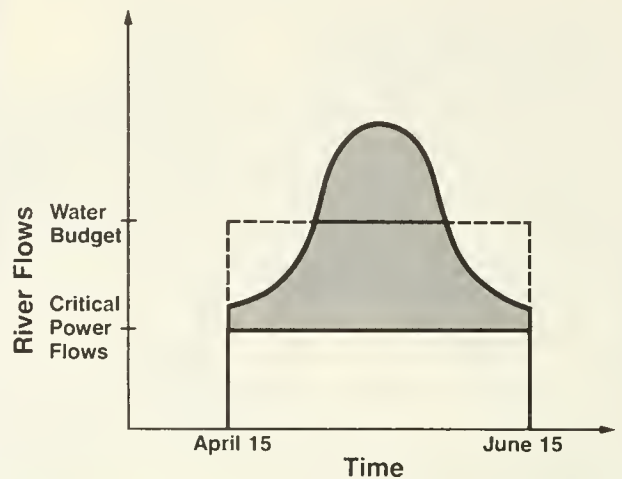
In addition, Hampson says, the water budget concept finally gives fisheries and tribal officials a seat at the table where power operation decisions are made about the river.

Council Chairman Dan Evans, a Washington member, says the water budget will also make fisheries officials more accountable for how the river is reshaped to accommodate the young salmon and steelhead. The budget gives them a fixed amount of water, says Evans, requiring them to use it with care so the greatest number of fish do indeed get out to sea.

The Council will release a draft fish and wildlife program in September with public hearings to be held around the region in October. A final program must be adopted by November 15 and then incorporated into the Council's long-range energy plan.

Water budget

How flows could be shaped to aid fish migration

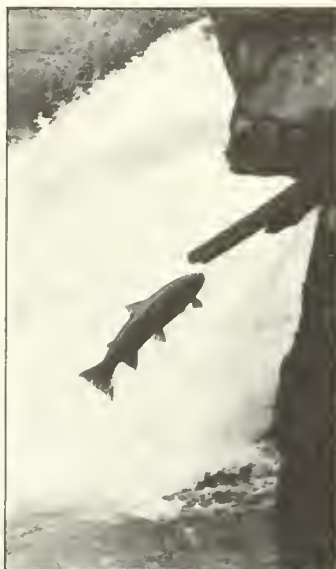


Council releases Mid-Columbia staff draft

The Northwest Power Planning Council, focusing on fisheries problems tied to dams along the mid-Columbia River, approved last month release of initial parts of a staff draft fish and wildlife program for the Columbia and its tributaries.

The staff draft, based on recommendations from federal, state, and tribal fisheries officials and various utilities, calls for construction of fish passageways around several dams located on the mid-Columbia River in central Washington, testing of experimental fish transportation systems, and the establishment of certain interim spill requirements over the dams. These measures are aimed at helping young fish travel downstream without going through the power turbines.

The Council, along with developing a comprehensive energy plan, is required by the Northwest Power Act to produce a program to "protect, mitigate, and enhance" the Columbia's fish runs and wildlife which have been



Fighting chance: Al Hampson, Oregon Council member, says the water budget concept would give salmon and steelhead a fighting chance as they try to overcome the Columbia's dams.

damaged by federal hydroelectric projects along the river.

The five mid-Columbia dams are owned by Douglas, Chelan, and Grant County Public Utility Districts (PUDs). Douglas PUD owns Wells Dam in North Central Washington. Chelan PUD owns Rock Island and Rocky Reach Dams near Wenatchee, and the Grant PUD owns Wanapum and Priest Rapid Dams just above the Tri-Cities on the Columbia.

The staff proposal calls for immediate testing of prototype fish passage systems at all five dams, with results reported to the Council by March 20, 1984. The Council would evaluate the passage systems or alternatives which, as called for in the draft, would be installed by March, 1986.

In tandem with prototype testing at Priest Rapids Dam, the program calls for initial testing of short-haul transportation (literally trucking or barging) migrating salmon and steelhead from points above the dam to just below.

The staff draft calls for two-phase testing of the transportation program. After the first phase, at the end of 1985, the Council would analyze the survival of the young fish. Depending on the results, the Council could then either approve a second phase of testing to evaluate the number of adult fish successfully returning from transportation or cancel transportation and order construction of passage facilities at Priest Rapids Dam.

PUD officials estimate passage facilities could cost \$14 to \$20 million a dam. Grant PUD officials have argued that they can protect just as many salmon and steelhead by shutting them around the dam — at a considerably cheaper cost.

In addition to the passage facilities and transportation studies, the draft program also calls for establishing certain spills for downstream fish migration until the bypass systems are completed. In addition, the draft program would establish the Council as the mediator of related disputes between the utilities and the fisheries agencies, including the tribes.

The Council found some immediate criticism of the proposal at its July 21 meeting.

Tim Wapato, Executive Director of the Columbia River Inter-Tribal Fish Commission, which represents four of the Columbia River treaty tribes, asked the Council to reconsider the staff draft before releasing it. Wapato said that the draft contained serious flaws, including inconsistency with Indian treaty rights, and that it failed to adequately consider information submitted at the

wildlife program will be released for public comment in September, with public hearings around the region in October.

The Council is required to adopt a fish and wildlife program by November 15, which will then be incorporated into the long-range regional energy plan for development of new resources sponsored by the Bonneville Power Administration. The Council's energy plan is due April, 1983.

The staff draft of the mid-

Proposals for studies or research and demonstration projects must be submitted to BPA by October 1 to be eligible for funding in fiscal year 1983.

The goal of the program is to develop promising technology, said C. Douglas Auburg, chief of BPA's branch of conservation engineering. BPA is interested in, for example, proposals to reduce the consumption of electricity for space and water heating, ventilating and lighting, electric motors, or industrial proc-



Man-made hurdles: While dams along the Mid-Columbia River, such as Priest Rapids, have provided years of cheap power, they've helped block downstream passage of young salmon and steelhead headed to sea.

public hearings held by the Council in March.

Council Chairman Dan Evans replied that the Council is "trying to be as public as we can in developing a fish and wildlife program." Evans said that release of the staff draft would provide an early opportunity for comment on possible program alternatives.

Bill Bakke, representing the Columbia River Citizens' Compact Group, argued that the draft did not provide fish equal status with power needs as Congress intended.

The Council's draft fish and

Columbia portion of the fish and wildlife program may be obtained by calling 1-800-547-0134 (in Oregon, call collect, 222-5161).

BPA seeks new savings

The Bonneville Power Administration is offering to fund innovative ways to save electricity in agricultural, commercial, and industrial operations.

esses. Proposals may also suggest using renewable resources to reduce overall electricity use.

Information on submitting proposals may be obtained from C. Douglas Auburg, Branch of Conservation Engineering, P. O. Box 3621, Portland, Oregon 97208.

BPA sets rate hike

The Bonneville Power Administration announced its proposed wholesale rate increase August 13. BPA proposes a 60 percent increase — from 1.13 to 1.8 cents per kilowatt-hour — for public utilities and for private utilities' small farm and residential customers. The proposed increase for directly served industrial customers is 50 percent — from 1.73 to 2.59 cents per kilowatt-hour.

The proposed rates have been sent to the Federal Energy Regulatory Commission. Pending interim approval, the new rates will go into effect October 1.



Idaho Council members tour possible dam site

Idaho Council members Larry Mills and Bob Saxvik (both right) recently visited a site on the Weiser River in west-central Idaho considered a potential dam site. Water backed up by the dam could be used for downstream fish flows, flood control, and some power production.

Council contractor reports available to public

The Northwest Power Planning Council's technical contractors are nearing the end of their work.

Last fall the Council hired several different contractors to conduct technical studies for the Council to use in making the regional energy plan. The contractors and studies are listed below:

Study Module I: Forecasting Models

This study area focused on developing computer models for forecasting regional energy demand. The primary contractor is Charles River Associates, with assistance from other contractors in the residential and commercial sectors.

The draft final report on documentation of computer models is due August 23 from Charles River Associates. Jerry Jackson and Associates' draft final report on the commercial sector model and Cambridge Systematics' draft final report on the residential sector model are also due August 23.

Study Module II: Resource Assessment

This study looked at alternatives for electrical energy supply, assessing a variety of resources for their availability, cost, performance, environmental and fisheries impacts, and major barriers to their use.

The contractor, Battelle Northwest, has completed its draft final reports. The reports, now available, focus on the following areas:

Volume I: Residential Conservation
Volume II: Commercial Conservation
Volume III: Industrial Conservation
Volume IV: Agricultural Conservation
Volume V: Biomass
Volume VI: Geothermal Electric
Volume VII: Geothermal District Heating
Volume VIII: Hydro
Volume IX: Solar
Volume X: Wind
Volume XI: Coal
Volume XII: Natural Gas
Volume XIII: Petroleum
Volume XIV: Nuclear
Volume XV: Interregional Transfers
Volume XVI: Cogeneration

Study Module III: Conservation Programs and Model Standards

This study explored possible conservation programs, strategies to implement the programs, and model conservation standards. Applied Management Sciences' draft report, now available, provides recommendations for all programs and standards. The final report is due August 31.

Study Module IV: Rate Design

This study focused on designing electricity rate structures that will promote conservation. The draft final report from ICF is now available, and the final report is due August 23.

Study Module V: Reserves and System Reliability

This study focused on the way the regional electricity generating system is used to assure reliable electric power supply. The draft final report from ICF has been received, and the final report is due August 23.

Study Module VI: Quantification of Environmental Costs & Benefits

The goal of this study was to develop a method to assess environmental costs and benefits of conservation and other energy resources. NERO and Associates' interim report is now available. The final report is due August 31.

For information about obtaining copies of contractor reports, contact Ruth Curtis at the Council's central office, 1-800-547-0134 (in Oregon, call collect, 222-5161).

... Surplus

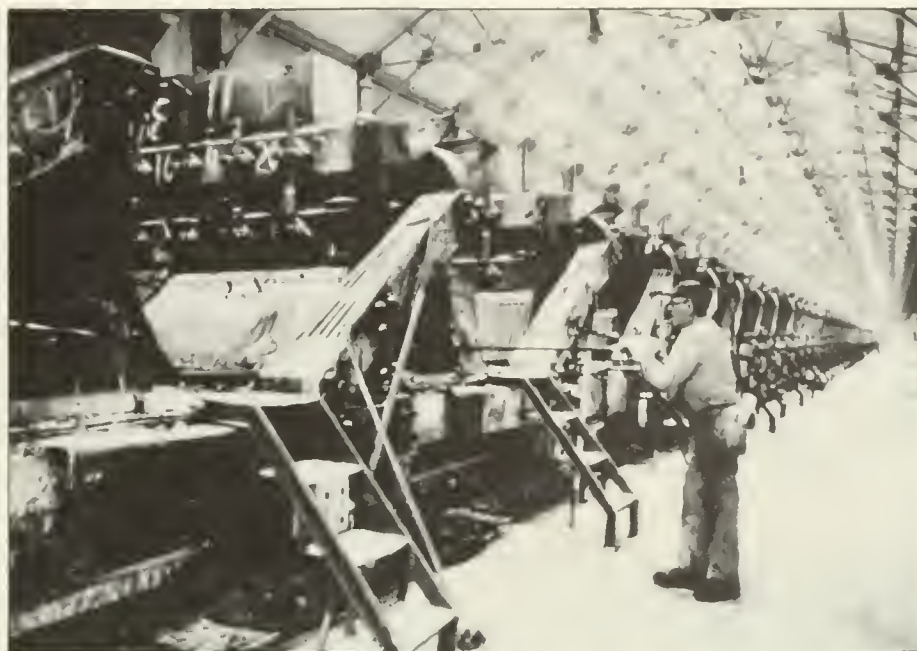
(From page 1)

the Northwest Power Planning Council, the new regional agency charged with developing a master energy plan for the states of Washington, Oregon, Idaho, and Montana.

The Northwest Power Act, which established the Council, laid down a new order for development of electric resources, giving conservation top priority. But when the Act was passed in 1980, it was debated against the backdrop of projected deepening power deficits, perhaps a power shortage big enough to run four cities the size of Seattle. Instead, the Council finds itself working at a time when many forecasts predict a surplus into the 1990s.

This isn't necessarily bad news. But like a new pair of shoes, the surplus takes a little getting used to. For example, what do you do about conservation when you have more power than you need? Do you push ahead aggressively? Or do you gradually hit your conservation stride only pushing the final kick when you see demand about to overcome existing supplies? Given the nature of the Northwest's power system, what are the financial advantages — and disadvantages — of having extra power? Can a surplus end up costing consumers more for electricity than they needed to spend?

All these questions may seem strange to old timers who remember the high-rolling days after Grand Coulee Dam was completed in 1941. As it seemed then, there was almost no limit to the Northwest's power. The rain and the snowfall provided the fuel and the Columbia River's dams generated abundant amounts of cheap power. Electricity finally came to many of the region's farms. The plentiful supply of electricity at a cheap price drew the energy-intensive aluminum industry to the region to contribute to the nation's war effort. The fledgling Bonneville Power Administration briefly hired folk singer Woody Guthrie to roam the region to hawk power. The region prospered in the post-war years, shifting from an economy closely tied to the land to a more diversified, industrial one. People came, and with them, ever increasing demands for electricity.



Aluminum for warplanes: With the need for aluminum for World War II planes, the aluminum industry came to the Northwest, drawn by abundant cheap power.

By the 1960s, most of the region's economically and environmentally suitable sites for major hydroelectric projects had been used. Growth in demand could almost be tracked using graph paper and a ruler. It was running at more than 6 percent a year — a doubling of power supplies required every 10-12 years. As other regions not blessed with a Columbia had done before them, Northwest utilities turned to "thermal" power plants, plants which used steam to spin power turbines instead of falling water. In the mid-1960s, the region embarked on the Hydro-Thermal Power Program, the first phase of which called for the construction of 20 nuclear and two coal plants by 1990. The program would add 22,000 megawatts, a near doubling of the amount of power then produced.

The plants were needed, utility officials said, because the hydro system had reached its limit and demand was still galloping along. In 1976 in response to the demand projections, Don Hodel, the BPA Administrator, issued a "Notice of Insufficiency" to the federal power marketer's customers, saying that after 1983 there were no guarantees all their power de-

mands could be met from the federal power system. The Bonneville Power Act of 1937 prohibited the agency from building its own power facilities, and a mid-1970s Treasury Department ruling had precluded BPA financial backing of any power plants beyond the first three Washington Public Power Supply System projects.

BPA officials believed demand would soon outstrip supplies. The demand-supply equilibrium would be pitched hopelessly out of balance. To avoid this potential chaos, the public and private utilities, BPA, and its industrial customers asked Congress for help. The result was the Northwest Power Act of 1980.

The legislation allowed the four states to enter into an interstate compact, creating a council of two members from each state to develop a 20-year plan for the power needs of BPA's customer utilities and industries. New energy resources, the law spelled out, would have to be needed and the cheapest resource available. The law set up a priority system for choosing new resources: conservation first; next renewable resources from wind, sun or water; then cogeneration or resources with high

Historically most utilities and BPA have developed enough resources to have sufficient power even in a low-water year. This hedge has created a surplus.

fuel efficiencies; and finally conventional resources such as coal or nuclear. The law, backers said, would bring order to power development as the region looked to adding large chunks of new power.

Today, the Act is colored by a degree of legislative irony. Conceived to deal with projected deficits, the Council now confronts various projections dramatically lower than those which launched the Hydro-Thermal Power Program. Today, things point to a different supply-demand imbalance altogether: a surplus.

An energy surplus, like those new shoes, comes in different shapes and sizes.

Right now, thanks to above average rain and snowfall and slack economic times, the region has a seasonal surplus. With so much water available to produce cheap electricity, most of the region's more expensive thermal plants are shut down in favor of hydropower. Even so, there's enough electricity surplus to sell to California utilities over the Pacific Intertie system of power transmission lines.

This surplus has produced an unexpected windfall for BPA, bringing it millions of California dollars for the region's excess electricity. For California utilities, always looking for electricity less expensive than their oil-fired power, it's a chance to tap into the Northwest's dirt-cheap hydro.

But the uncertainties of high-water surpluses are pivotal to some of our region's present energy problems. You can't count on every year being a high-water year. Rain and snowfalls vary dramatically. As good as 1982 is, 1977 was bad. The Columbia's flows were half of the average flows. The region scrambled to make up the shortfall. Such is the nature of a hydro-dominated power system: the fuel is free, the power cheap, its availability uncertain.

Utility officials call this phenomenon "critical water." Historically most utilities and BPA have developed enough resources to have sufficient power even if a low-water period runs several consecutive years. This "critical water" planning has led utilities to overbuild to hedge against dry years. This hedge, combined with

High water = big surplus

This is such a bountiful year for Northwest hydropower that there is nearly enough surplus power to supply the Portland General Electric service area for 23 months.

"When the Northwest has a good water year, it's great for generating electricity. But when it's bad, it's really bad. The swings in the Columbia River System's ability to generate power are really dramatic," says Merrill Schultz, of the private utilities' Intercompany Pool.

The Army Corps of Engineers estimates that the January-July flow of the Columbia River at The Dalles will be 121 percent of normal, or about 133 million acre feet of water per second.

Many Northwesterners will remember the bad year of 1977. A serious drought cut runoff to about 50 percent of normal, creating a shortage of hydropower and forcing all the region's available thermal (coal and nuclear) plants to run full-tilt to supply enough power. But this year, with an abundance of hydropower, the expensive thermal plants can be shut down, their power substituted with low-cost hydropower.

Actually, this year the region is making a profit as excess hydropower not needed in the region is being sold to California at a record rate. The Bonneville Power Administration announced last month that power sales to California hit a record for the first six months of 1982.

From January through June of this year, 11.9 million megawatt-hours of



Good snowpack: A Soil Conservation Service official checks the snowfall on Mt. Hood, which helps determine the Columbia's spring runoff.

electricity were sold to California utilities, 13 percent ahead of 1976, the record year. Federal law requires that all surplus electricity generated at federal dams must first be sold within the Northwest. After that, if there is still surplus power, it may be sold to customers outside the region.

other factors, has created the second type of surplus, what planners call a "planning" surplus.

In the case of the Northwest, projections of a planning surplus can be attributed to a number of reasons.

For years, utilities have overbuilt power generation capacity, figuring either de-

mand would soon catch up or there was a willing customer — California — for any surplus. That was true of hydropower, which cost less than one-third of a cent per kilowatt-hour to generate. It hasn't been true of new coal or nuclear plants, which can cost 10 to 30 times more. Some WPPSS 4 and 5 participants found that out a few



Right mix: It's not whether to overbuild or underbuild, says Roy Hemmingway, Oregon Council member; it's getting the cheapest power resources.

months ago when they were seeking out-of-region buyers for the plants, estimated to cost \$13 billion. California utilities reportedly turned thumbs down, saying they weren't interested in the Northwest's costly thermal projects. They wanted cheap hydro. The participants, facing financing problems, finally stopped work on the plants.

The cost of the WPPSS projects — which ballooned from the original \$4 billion estimate for the five plants to nearly \$23.8 billion — has also contributed to the lower demand projections. In the late 1960s, when the WPPSS projects were conceived as part of the Hydro-Thermal program, electricity demand was estimated to grow by 6.4 percent annually. Today, BPA's own forecast, partially affected by rising electric rates, pegs base case growth at 1.6 percent. BPA's wholesale rate has gone from 0.3 cents per kilowatt in 1979 to more than 1.8 cents proposed for this year. Rising rates have spurred many Northwest consumers to conserve or to switch to gas or wood heat, further adding to a planning surplus. In addition, recessionary times for the wood products and aluminum industries have contributed to the surplus. Furthermore, the incoming industries, such as the electronics field, are far less energy-intensive than heavy manufacturing or metals production.

Recent events reflect the changing energy realities — the cancellation of two WPPSS plants and delay of a third, the withdrawal of the license application for Portland General Electric's Pebble Springs Nuclear Plants, and the temporary shelving by Puget Sound Power & Light of two nuclear plants on the Hanford Reservation. These projects alone have cost more than \$2.5 billion to date, the costs to be

passed on to ratepayers and or stockholders.

Still, given the uncertain nature of energy forecasts, any long-term surplus has an ephemeral quality. BPA's forecast, for example, anticipates an economic upturn but nevertheless ranges from 0.9 percent annual electricity growth to 2.4 percent. (As a rule of thumb, each 0.3 percent of growth compounded over 10 years equals the demand of another 600 megawatts of electricity). And the duration and size of any surplus could be altered by any number of forces such as a robust turnaround in the region's economy or voter denial of bonds to complete the remaining WPPSS projects.

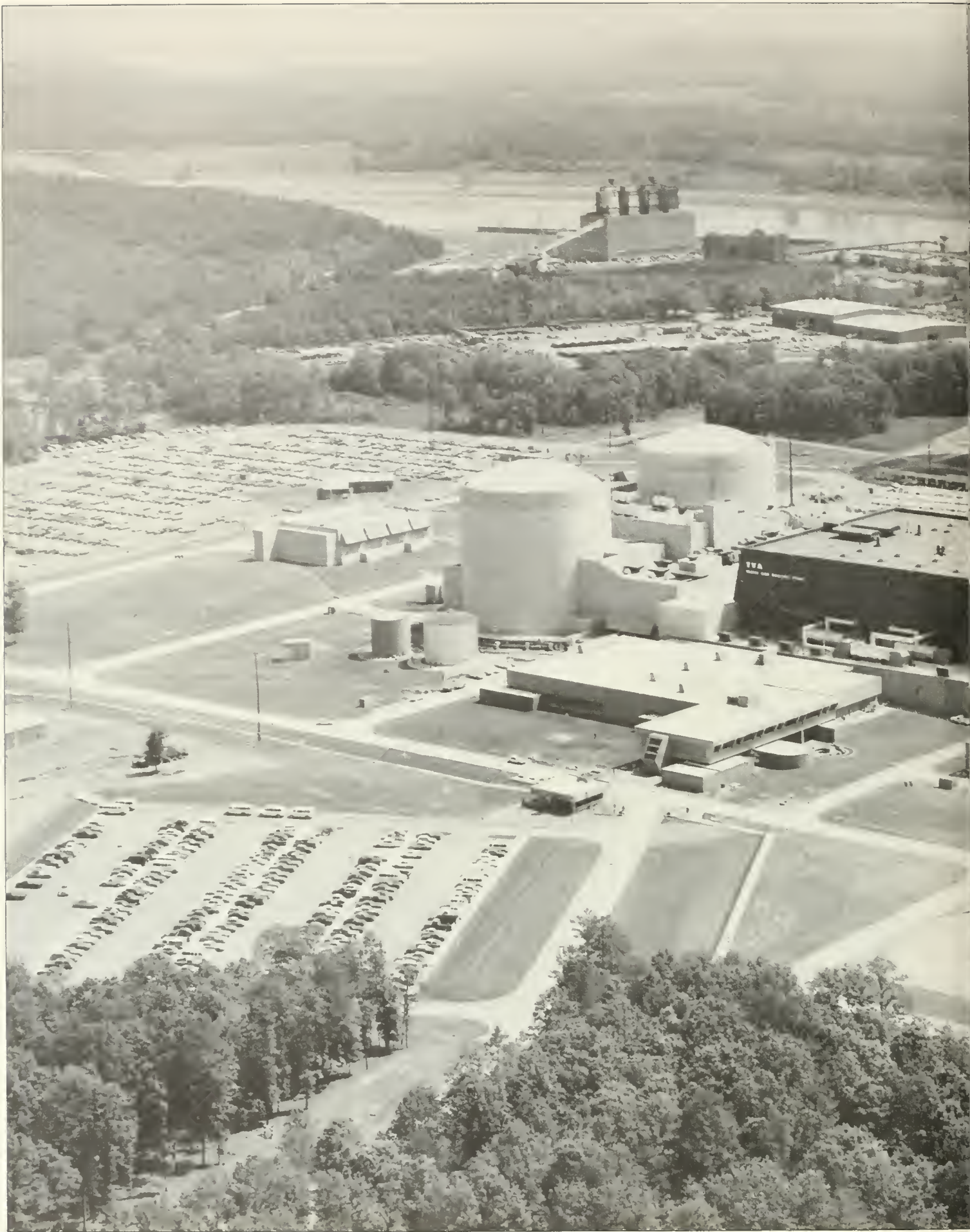
It is within this swirl of events that the Northwest Power Planning Council must develop a program to protect the Columbia's fish and wildlife, prepare an electric energy demand forecast for the next 20 years, and write a plan to meet BPA's power requirements during that period.

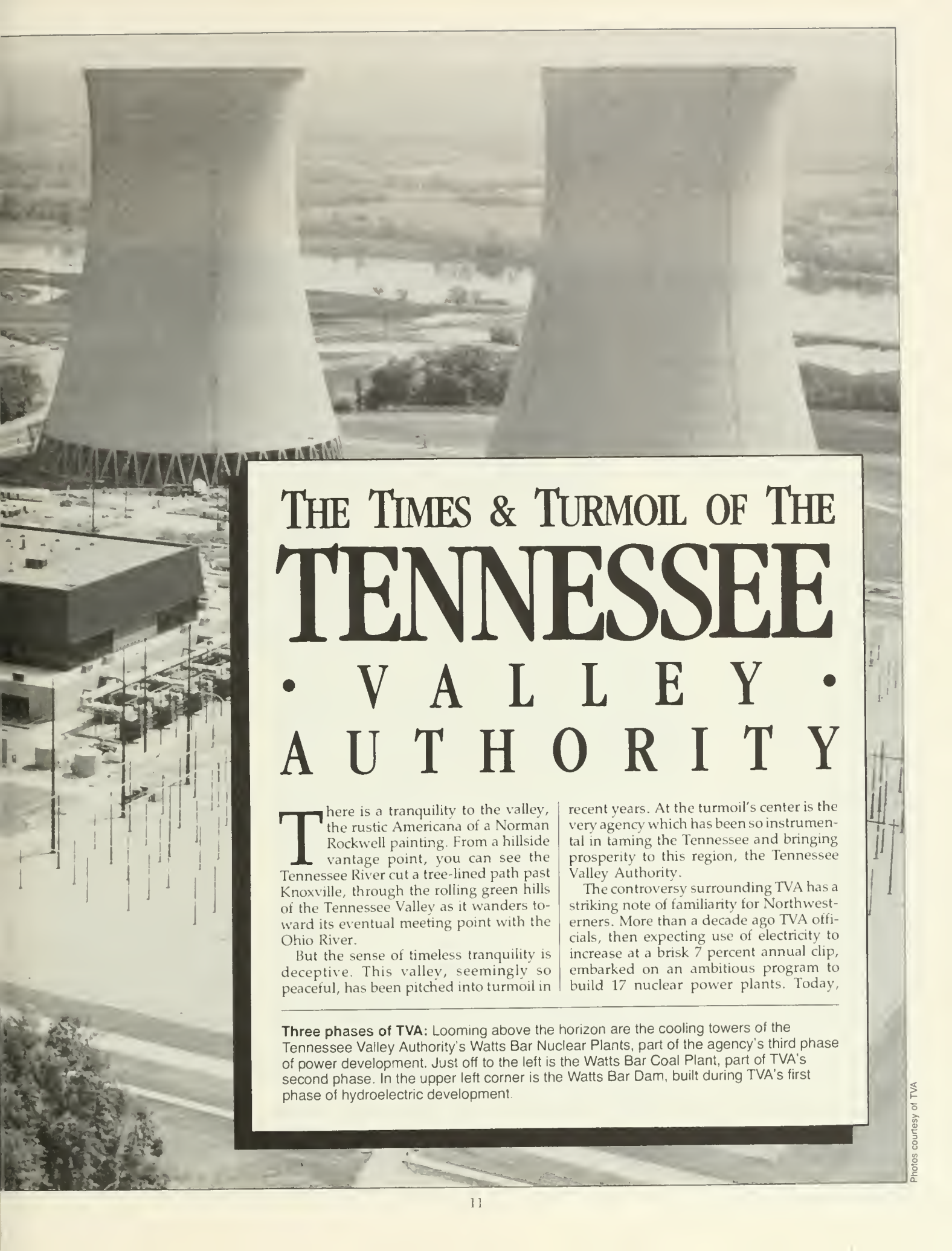
Over the past decade, energy realities have turned upside-down. New large power plants take billions of dollars and years to complete. And utilities that overbuild such expensive resources may find

(Turn to page 17)



Down times: With the recession sending new construction reeling, the wood products industry is facing troubled times — and using less power.





THE TIMES & TURMOIL OF THE TENNESSEE • V A L L E Y • A U T H O R I T Y

There is a tranquility to the valley, the rustic Americana of a Norman Rockwell painting. From a hillside vantage point, you can see the Tennessee River cut a tree-lined path past Knoxville, through the rolling green hills of the Tennessee Valley as it wanders toward its eventual meeting point with the Ohio River.

But the sense of timeless tranquility is deceptive. This valley, seemingly so peaceful, has been pitched into turmoil in

recent years. At the turmoil's center is the very agency which has been so instrumental in taming the Tennessee and bringing prosperity to this region, the Tennessee Valley Authority.

The controversy surrounding TVA has a striking note of familiarity for Northwesterners. More than a decade ago TVA officials, then expecting use of electricity to increase at a brisk 7 percent annual clip, embarked on an ambitious program to build 17 nuclear power plants. Today,

Three phases of TVA: Looming above the horizon are the cooling towers of the Tennessee Valley Authority's Watts Bar Nuclear Plants, part of the agency's third phase of power development. Just off to the left is the Watts Bar Coal Plant, part of TVA's second phase. In the upper left corner is the Watts Bar Dam, built during TVA's first phase of hydroelectric development.

The Tennessee Valley Authority and the Bonneville Power Administration are New Deal cousins, both focused on the major rivers of their regions.

after TVA's wholesale rates have more than doubled and thousands of valley residents have taken advantage of one of the nation's most aggressive conservation programs, nearly half of those plants have been shelved, billions spent for power plants which may never be completed. And now, TVA officials are trying to figure out what to do with more electricity than they need.

For Northwesterners, the troubles of the Tennessee Valley Authority offer an example of how another region has dealt with its supply and demand dilemma and, perhaps, a glimpse into some of the possible paths from times of turmoil.

The Tennessee Valley Authority and our region's Bonneville Power Administration are New Deal cousins, coming from common ancestors but different branches of the public power family.

Both agencies focused on the major rivers of their regions and how to harness the free-flowing streams for the good of all. Like the Northwest, the Tennessee Valley was an area closely tied to the land. But farming had extracted its toll from the valley, leaving the land overworked and unproductive. During droughts, the land would turn to dust and blow away. During floods, as the Tennessee and its tributaries swelled and spilled over their banks, precious topsoil washed away.

But some had a vision for the river, seeing that it could be used for navigation to provide inland commerce, for flood control to tame the Tennessee, and for power production to provide electricity.

With the 1932 election of Franklin Delano Roosevelt, the visions soon became reality. Within the first 100 days of the New Deal, the president signed into law the Tennessee Valley Authority Act of 1933. The TVA was one of the New Deal's super agencies — "a corporation," Roosevelt said, "clothed with the power of government but possessed of the flexibility and initiative of private enterprise." Under the TVA Act, the new federal agency was responsible for navigation along the Tennessee River, flood control to aid farmers and riverside communities, hydroelectric power production, reforestation of the barren rolling hills of the Ten-



The first: The Tennessee Valley Authority began with Norris Dam, just northeast of Knoxville. The project, like the many which followed, put thousands of Valley residents back to work and produced some of the nation's cheapest electricity.

nessee Valley, and fertilizer research and production from leftover World War I synthetic nitrate facilities in Alabama.

TVA's charge was clear and sweeping — bring prosperity to the valley.

Prosperity had been something long missing from the Tennessee Valley. With land overfarmed, agriculture fell on hard times and less than 5 percent of the farms had electricity. The region's per capita income was less than half the national average, and unemployment haunted thousands of valley residents.

TVA offered hope. The construction of the dams provided jobs for thousands and the promise of cheap electricity for farms and industry. And as World War II began, there was need for even more electricity for the valley's war-related industries and for a super-secret project that would tie the Tennessee Valley and the Northwest, the Manhattan Project.

By Northwest standards, TVA dams — nine on the Tennessee itself and more than two dozen others on its tributaries throughout the seven state region — were

small. There was nothing of the mammoth scale of Grand Coulee Dam. In turn, TVA found much sooner than the Northwest that it would have to turn to other sources of electricity than falling water.

In 1940 the Tennessee Valley Authority entered the second phase of its power generation, turning to coal, another of the region's bountiful resources. By 1970 TVA had placed 63 coal units in service, capable of producing more than 17,000 megawatts of electricity. The coal-fired plants brought the region two-fold prosperity. First, through increasing economies of scale and greater electrical production, they paved the way for more industry. Second, by using coal they were providing an extra shot in the region's economic arm. For the Eastern coal industry, bumped off the railroad market by diesel engines, TVA was a welcomed new customer.

But there were also problems with coal. The billowing plumes of smoke — which once symbolized power for new industries for new jobs — also meant air pollution and acid rain. And as the cost of coal began to soar, so did electric rates.

So as the 1960s progressed, TVA began looking at a third phase of power generation: nuclear power.

Perhaps these first three phases of TVA's power development are best illustrated by a short stretch of the Tennessee River midway between Knoxville and Chattanooga. Straddling the river is the Watts Bar Dam, finished in 1942. The dam cost \$35 million and can produce up to 166 megawatts of electricity. Downriver a few hundred yards on the western bank stands the Watts Bar coal plant. The four units, started in 1940 and costing \$22 million, were TVA's first ventures into coal-fired electricity. Today, the Watts Bar coal plant stands silent, shut down for more efficient, more modern power plants.

From the same spot, looking a bit farther downriver, one is struck by two mammoth concrete structures which rise from the river bank high above the deciduous trees. These are the cooling towers of the Watts Bar nuclear plants. Construction workers are preparing the first of the twin reactors to go into operation in early 1984 at a cost of nearly \$2.5 billion. One cannot help but be struck by the awesome scale of these plants when compared to either the Watts Bar coal or hydro facilities. The cooling towers, great gray shells, stand out on the horizon from miles away.

The physical proportions of the Watts Bar Nuclear Projects are also a symbol of TVA's one-time commitment to nuclear power.

By the early 1970s, TVA officials were projecting that the demand for electricity would

increase 7 percent a year. Power was cheap. In 1971, coal was running \$6 a ton and nuclear fuel was even cheaper. Retail rates were among the nation's cheapest. TVA consumers, like BPA consumers in the Pacific Northwest, used nearly double the national per capita amount of electricity. To meet the projected demand, TVA turned to the atom. By 1974, the federal agency had committed to build 17 nuclear plants at 7 sites around the valley. TVA's first plant, Browns Ferry, was completed in 1973, costing a total of \$909 million or \$276 per kilowatt of power capacity.

But the events of the 1970s, as they did with the Bonneville Power Administration, badly buffeted the Tennessee Valley

Authority. TVA's wholesale rates were already headed upward thanks to the rising cost of coal. In 1981, TVA paid an average of \$38 dollars a ton, more than six times the 1971 cost. In addition, years of double-digit inflation, combined with escalating interest rates, steadily pushed up the completion costs of TVA's ambitious nuclear program.

As the projects' costs went up, so did TVA's wholesale rates and, ultimately, the retail rates of millions of ratepayers dependent on TVA power. From 1971 to 1981 average residential rates went from just over a penny a kilowatt hour to nearly 4 cents a kilowatt hour. When TVA's Sequoyah Nuclear Plant Unit 1 came on line

last year, it cost more than \$800 per kilowatt of capacity, or nearly three times the cost of TVA's first nuclear plant, Browns Ferry. Ratepayer outcry over the rising rate spread across the Tennessee Valley like the winter flood waters. Citizens worried about how to deal with their rapidly escalating monthly utility bill. "We got 'em into this mess," said a TVA official. "We had to do something to help them out."



Big coal: When TVA ran out of hydro, they turned to coal power in a big way. This plant, Bull Run near Oak Ridge, is one of the largest coal units in the world, the smoke stack climbing 800 feet.

With the 1977 appointment of S. David Freeman to the three-member board of directors, TVA changed course and began to push one of the nation's most aggressive conservation programs. Its home insulation program offered free energy audits to nearly 500,000 valley residents and provided no-interest loans to more than 200,000 to weatherize their homes and increase the efficiency of their electrical use.

"We made, as a matter of policy, conservation our highest priority in terms of being our most economical source of energy," Freeman told KING Broadcasting reporters earlier this year.

"A well-insulated home is the equivalent of a generator

TVA officials estimate they can produce a new kilowatt of electricity through conservation for \$600 per kilowatt.

By comparison, a new nuclear plant can cost an estimated \$2,000 to \$3,000 per kilowatt.

that generates a couple of kilowatts of electricity around the clock. It never breaks down, it doesn't pollute, and on the basis of the cost, it's a whole lot cheaper than building new power plants."

TVA officials estimate that they can produce a new kilowatt of electricity through conservation for \$600 per kilowatt. By comparison, power from a new nuclear plant can cost an estimated \$2,000-\$3,000 per kilowatt. In light of the cost and slackening demand, TVA officials have delayed eight of the 17 nuclear projects under construction, and recently TVA staff urged the board to scrap four of those reactors altogether.

But the TVA's shift from nuclear to con-

servation hasn't been a snap.

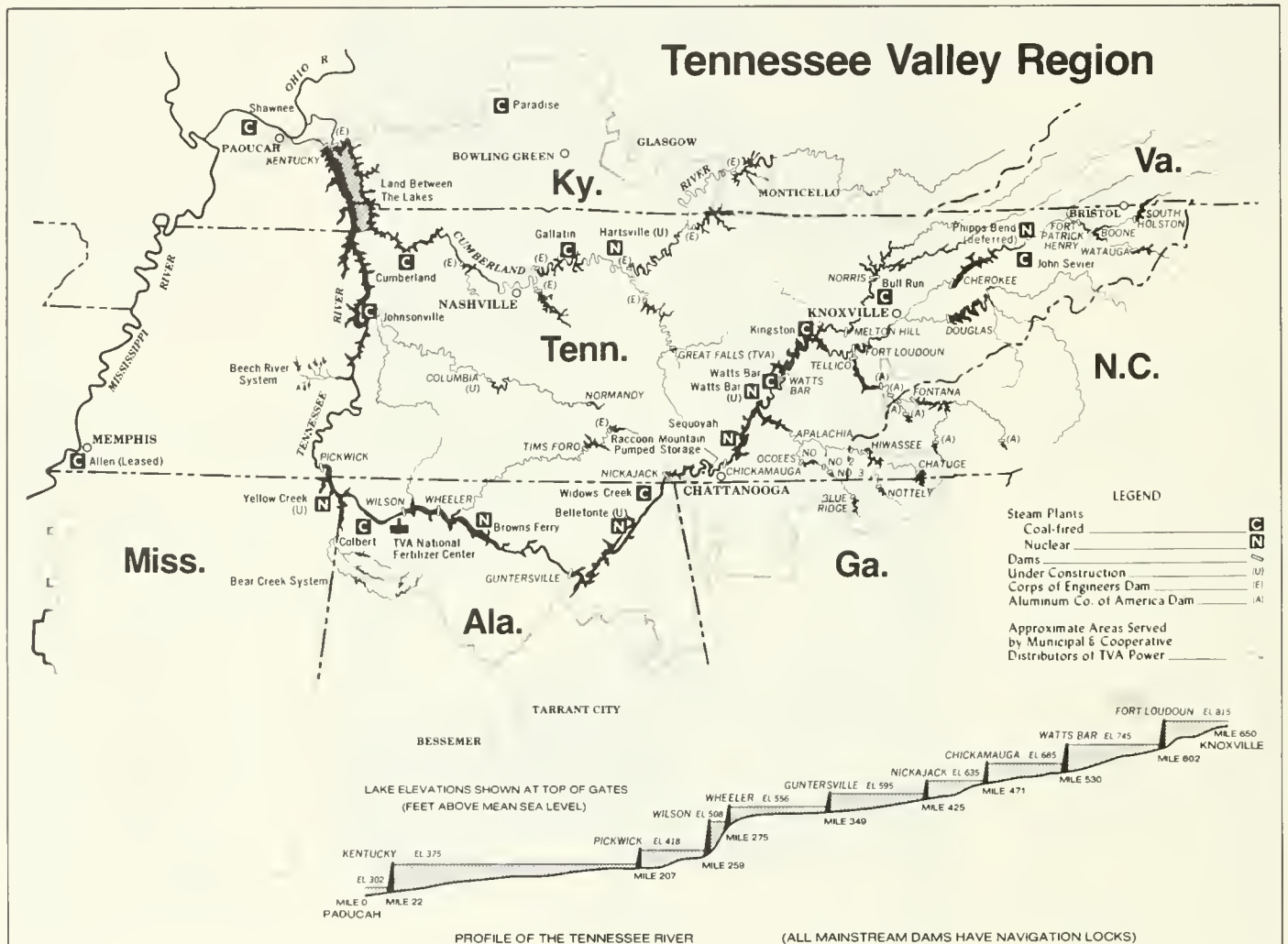
"You have to realize that Oak Ridge (Tennessee, just outside of TVA's headquarters in Knoxville) is the home of nuclear power," says Freeman. "It's like going to Houston and saying we don't need to use oil anymore."

The fallout from the deferral decisions has not been unlike the problems surrounding the deferral or termination of various Washington Public Power Supply System plants. Some citizens have complained about lost jobs during a time of high unemployment. Small communities near the mammoth projects have been rocked by the economic disruption of having the plants suddenly stopped.

And after the construction workers have left and the plants stand silent, one thing remains — the projects' multi-billion dollar debt. TVA has spent \$1.85 billion on the four reactors proposed for cancellation. And this cost, whether a kilowatt of power is ever produced, will ultimately be picked up by the valley's ratepayers.

Yet beyond the direct ramifications of the plant deferrals, TVA's conservation programs have not been without problems.

Some of the problems have been simple institutional inertia. Internally, the engineer-dominated TVA has struggled with the shift from complex plans for power generation to the equivalent but different



complexities of power conservation. In addition, some of TVA's retail power distributors, 160 public utilities scattered throughout the valley, were unsure about the reliability of conservation and resistant to the push for it by the powerful federal agency.

TVA has also encountered problems implementing conservation programs and making sure there are enough trained contractors to install the measures and qualified inspectors to make sure they were installed correctly. TVA estimates that 20 to 25 percent of the weatherization jobs fail inspection.

There have also been public perception problems. As happens with conservation programs, while ratepayers have taken energy-saving steps they have still seen their rates go up. And the program has not been immune to cost escalation. As TVA's cost of borrowing money has increased, so has the cost of conservation.

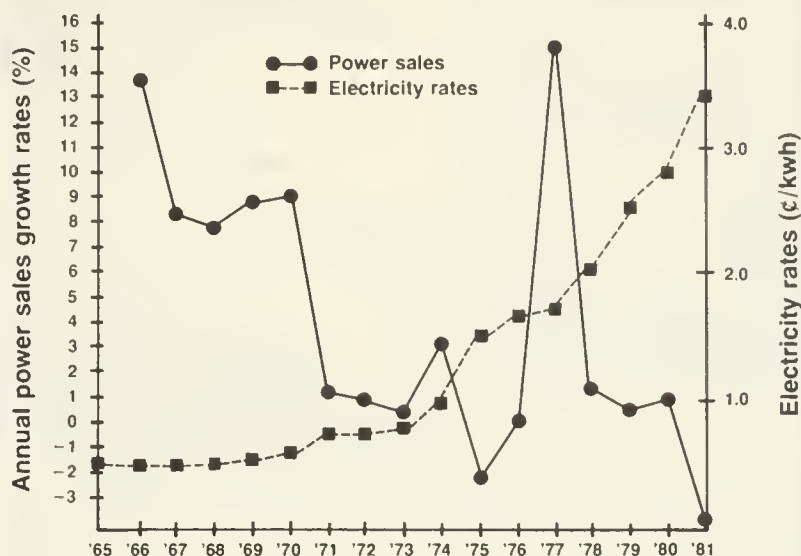
Still, despite the problems, the savings from TVA's sweeping conservation effort have been impressive. Officials estimate that the home insulation program has allowed TVA to defer more than 1,000 megawatts in new power producing capability which could have cost billions to produce from a conventional power plant.

Today, TVA faces a different dilemma.

The times have changed. The forecasts, which once projected 7 percent annual growth, now range from 3 percent to less than 1 percent. The economies of scale, which pushed towards increasingly larger dams, coal and nuclear facilities, have been shattered. TVA has found that bigger is not necessarily better. Indeed, the more you build, the more it costs. And now TVA planners use terms that have an increasingly familiar ring — "planning uncertainty" and "resource flexibility."

The past decade has been, as it has for the Pacific Northwest, a traumatic one for the TVA. The rapidly escalating rates, which have since plateaued, have shaken some of the public's faith in the agency, TVA officials acknowledge. For David Freeman, considered one of the sharpest utility executives in the nation, there has also been a personal political price. Free-

TVA's power sales and rates



Power sales growth rates derived from TVA total kwh sales by fiscal year. Figures include all TVA sales with the exception of deliveries to federal agencies. (According to TVA, the large 1977 increase resulted from winter and summer temperature extremes and a better business climate.)

Electricity rates are TVA area average wholesale power rates by calendar year.

TVA conservation programs

When the cost of building conventional power plants started skyward, the Tennessee Valley Authority responded with one of the nation's model conservation programs. The TVA board of directors decided in 1977 that conservation was an energy resource and could be developed as such on a region-wide scale.

Basically, TVA developed three energy-efficient programs which were marketed by most of their 160 retail publicly-owned utilities throughout the Tennessee Valley. The programs are:

1) Home Insulation Program.

Under this program, free TVA-sponsored energy audits were provided to all homeowners in the region. For those customers with either electric heat or air conditioning, they were offered no-interest loans up to \$2,000. The loans were repaid by the customer on his or her monthly utility bill, divided evenly over a seven-year period.

To date, more than 500,000 energy audits have been conducted, with nearly 210,000 loans made for \$185 million. For the investment, TVA has managed to nail down more than 1,000 megawatts of electricity, or roughly the equivalent of one and one-half nuclear plants.

2) Heat Pumps.

In addition to the home insulation program, consumers were also presented with the chance to install a modern, energy-efficient electric heat pump system if their home or residence had a central electric heating or cooling system.

To date, TVA officials have recommended the installation of more than 24,000 heat pumps with 12,000 units actually installed at a cost a little over \$39 million. Consumers are allowed to borrow the money at TVA's cost with up to ten years to repay. The average loan is \$3,100 per installation. The program has saved 65 megawatts.

3) Low-Income Program.

To nail down energy conservation savings from low-income ratepayers, TVA has worked with a variety of people. The programs include installing conservation in public housing units, working with the Federal Department of Housing and Urban Development; a program directed toward private rental properties of low or moderate income renters; a neighborhood weatherization program targeted at low-income or minority neighborhoods; and training of auditors for local community action agencies to conduct energy efficiency programs.

man, appointed chairman of TVA during the Carter administration in 1978, was replaced last year as chairman by Reagan appointee Charles Dean. "Dean was appointed because there were indications Dave was going too far," one local official told the *Knoxville Journal* recently.

And if TVA has gone too far, it now finds itself in a rather ironic situation. With nearly half of the original nuclear projects now deferred, TVA officials are wondering what to do with more power than they can use. Under the agency's current estimates, it will not need any new generating resources until sometime in the next decade. TVA officials say they've been stymied in attempts to sell their surplus power outside the valley region, perhaps to oil-fired utilities along the Gulf.

In turn, they are rethinking the agency's conservation efforts. Conservation may simply not be cost-effective, says Robert



The next generation: TVA officials say when agency needs new power sometime in the 1990s they will turn to this as the fourth phase of power generation: the energy-efficient home.

Steffy, chief of TVA's conservation and rates division, when you already have a power surplus.

Still, Steffy and other TVA officials seem convinced of one thing: when the agency

comes to add its next phase of power development, the cheapest generator may well be the most unassuming — the energy-efficient home.

TVA's nuclear program and plant deferrals

Plant	Unit	Capacity (MW)	Units Ordered	Construction Complete	Commercial Operation	Estimated Project Cost (millions)
Browns Ferry	1	1152	1966	—	1974	\$909
	2	1152		—	1975	
	3	1152		—	1977	
Sequoyah	1	1221	1968	—	1981	\$1960-\$2070
	2	1221		—	June 1, 1982	
Watts Bar	1	1270	1970	81%	1983-84	\$2365-\$2550
	2	1270		52%	1984-85	
Bellefonte	1	1332	1970	79%	1984-87	\$3030-\$3585
	2	1332		65%	1985-88	
Hartsville	A1	1287	1972	44%	Deferred (1982)	N/A
	A2	1287		34%	Deferred (1982)	N/A
	B1	1287		17%	Deferred (1979)*	N/A
	B2	1287		7%	Deferred (1979)*	N/A
Phipps Bend	1	1287	1974	27%	Deferred (1981)*	N/A
	2	1287		5%	Deferred (1979)*	N/A
Yellow Creek	1	1375	1974	35%	Deferred (1982)	N/A
	2	1375		3%	Deferred (1979)	N/A

* Being considered for cancellation.

... Surplus

(From page 9)

themselves left holding large blocks of power with no place to sell them.

"It's not whether to overbuild or underbuild," says Roy Hemmingway, an Oregon Council member. "It's how do we get the cheapest mix of resources?"

One avenue is to develop an array of resources which can be built quickly and in flexible increments with emphasis placed on conservation programs and small renewable resources. In May, the Council adopted a planning philosophy aimed in just that direction — focusing on flexible small resources while developing options (such as pre-siting a hydro facility) which could give the region the ability to meet a wide range of growth scenarios, at a lower cost.

So what do you do about conservation and renewable resources — the first two priorities of the Northwest Power Act — when you're confronting a surplus?

The Natural Resources Defense Council, in a recent paper discussing the current surplus, suggests it might be better to pursue more long-term conservation steps than those relatively inexpensive measures which can be easily installed at any time.

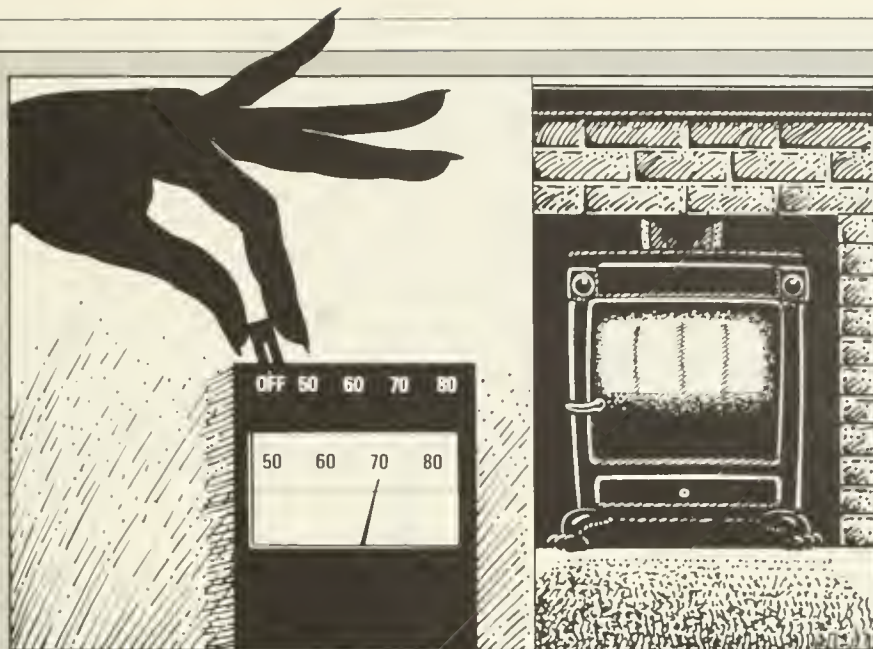
"The region can save more . . . by concentrating on the long-run measures," says the NRDC.

"There are also technical reasons to prefer long-run measures. Many of the long-run conservation measures involve irreversibilities: conservation not purchased today is much more expensive or even impossible later.

"For example, a house built with bad (solar) orientation now will be impossible to correct later; a house with double-paned windows where triple would have been optimal will not be cost-effective to retrofit; an office built with a shell and HVAC (heating, ventilation and air conditioning) system designed around high lighting will be hard to retrofit for a day-lighting or low-lighting case."

The lost opportunities can also apply to other resources. For example, a business modernizing its plant may be weighing whether to install a cogenerator to use waste industrial steam to produce electricity, which could be sold to the local utility. If the investment isn't made then, it may

(Turn to page 18)



Turning off the juice

You've got electric heat and you're tired of high utility bills. Out back, there are several big trees on your land. And you can get a good wood stove installed for between \$400 and \$1,000. Should you . . . ?

With lots of wood in the Northwest and high unemployment, many people have exercised or are considering the wood heat option. As electric rates have gone up and continue to rise, many people have sought ways to hold down their heating bills.

"There was a lot of switching to wood down in Southern Oregon, particularly in Jackson County around Medford," said Bill Sanderson of the Oregon Department of Energy. "It's occurring," said Jerry Beck, Grays Harbor County (Washington) Public Utility District. "You can see the stacks of wood as you drive down the street, where there were no stacks before."

In studies for Washington Water Power, Spokane, and Puget Sound Power and Light, Bellevue, two investor-owned utilities in eastern and western Washington respectively, approximately 12 percent of residential customers used wood as their primary heating fuel.

Is wood heat a cheap solution to higher electric bills? Unfortunately, the answer is not a simple one.

Wood heat may offer some price advantages to those who have easy access to it, such as a stand of trees on their land or a nearby site with available wood. Cutting, hauling, stacking, and stoking a furnace: the handling of wood is labor-intensive. Some free

wood is available on federal lands, but the depressed state of the timber industry has cut down on the supply of slash, a source of much of the free wood once available. Costs for wood cut and delivered have run as high as \$100 per cord. Depending upon how much wood is used, and whether it is "free" or bought, can affect whether it is much cheaper than electricity.

"There are serious safety and air-pollution problems with wood heating," said Sanderson. Fires from improperly installed stoves can be a major hazard, he said. And air pollution can be severe: "Jackson County is going to have to decide whether they're going to breathe or burn wood," he said. "There's a terrific air pollution problem around Medford."

Sanderson said people in rural areas, where unemployment is high and where electricity is going up in price, may be more likely to switch to wood heat. But the shifts from electric to wood heating are uneven. In the Puget Power study, it was shown that most conversions from electric heat were to wood heat. Yet the Water Power study concluded that the percentage of customers switching from electric to wood heat would increase by only 2 percent — from 12 to 14 percent — by 1985.

Sanderson observed that while there may be some "romantic" attachment to wood heat, many people will find it impractical. "But if you're unemployed and can't pay the cost of electric heat, you may switch to wood as a temporary step."

never be made; the chance for electric generation gone.

But in a surplus situation, conservation and certain resources may not always be the best buy for a utility. A 4 cent per kilowatt-hour conservation program in the short run is more expensive than a coal plant with an operating cost of 1 cent per kilowatt-hour. Over the long run, however, that same program could be considerably cheaper than a new coal or nuclear plant.

Pending the Council's guiding forecast and energy plan, the Bonneville Power Administration is trying to sort out what resources to go after.

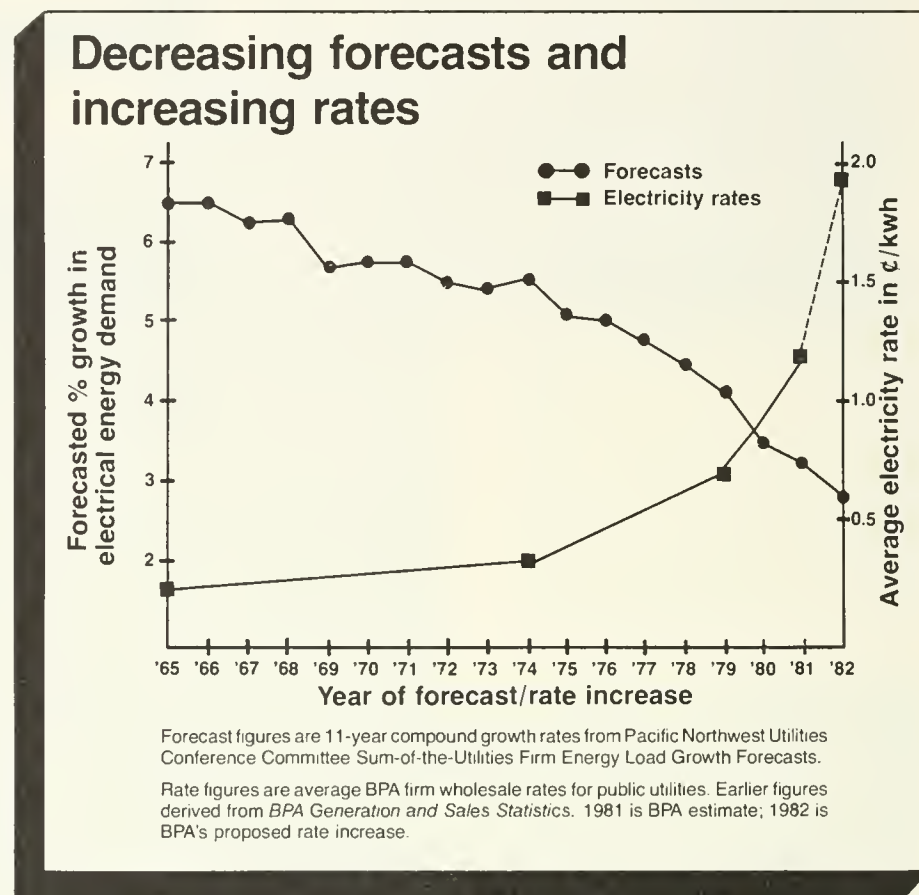
"In general, BPA will focus its resource acquisition efforts at this time on cost-effective resources that will minimize BPA cash flow requirements in excess of the incremental revenue which BPA receives from surplus power sales and that will minimize adverse environmental impacts," the agency said in its recently published "Near Term Resource Policy."

BPA says it will maintain its current conservation program levels and work on developing delivery systems and financing options so they will be ready when additional conservation is needed in the late 1980s.

To acquire new resources before 1985, BPA's proposed policy would set three conditions: the total cost would not exceed 3.5 cents per kilowatt-hour, the majority of the power would be generated or conserved during the time of expected deficits, and it would take several years for the resource to reach full potential.

Bonneville would consider acquiring new resources, however, if "a delay or loss to the region on a long-term basis would result in an increased total system cost associated with the resources used to meet forecasted loads."

The new imbalance comes at a difficult time for BPA. With bills coming due for power plants started in the 1970s, rates are going up rapidly. As backer of the bonds for the first three WPPSS projects, BPA has gone through a series of large double-digit rate increases which are not likely to level until 1984 or 1985. If BPA is cautious about sponsoring new resources, including con-



servation, it is in part because the agency wants to cap its own revenue needs and thereby hold down consumer rates. Bonneville, like many of the region's utilities, has watched the ratepayers' revolt in Washington, and officials say they are mindful of the hard economic times for individuals and businesses. Given a potential surplus, ratepayers could get stuck paying for comprehensive conservation programs while new multi-billion-dollar plants stand idle, producing neither electricity nor revenues.

Related to this is the question that if new plants are completed and their power not immediately needed, can the power be sold for the cost to produce it? As events have evolved, California — once thought to be a bottomless basin into which the Northwest might pour any surplus at any asking price — might not be a ready answer to the surplus question. California

has balked at buying extra power from the WPPSS plants for the actual production costs, preferring to hold out for the considerably cheaper hydro. With California having several sources from which to buy electricity and the Northwest having the Golden State as its only surplus customer, BPA is a hostage seller. Earlier this year, as an example, California utilities were picking up seasonal surplus hydro at 0.6 cents per kilowatt, BPA's so-called "dump" rate charged when the power marketer literally has water spilling over the dams.

If the Southwest won't pay the cost of the Northwest's new nuclear power, is there some way to "firm up" BPA's surplus? Should the region pursue an aggressive conservation effort in the face of the surplus, hoping to recoup the cost of the surplus-extending programs from out-of-region power sales?

(Turn to page 20)

The Pacific Intertie



Power link
for NW, SW

It's called the Pacific Intertie, stretching from the Columbia to Southern California to wire together the Northwest and the Southwest. When one area is short of power, the Intertie enables it to tap into the surplus of the other region.

First conceived in 1935 but not built until the 1960s, the Intertie has proved a benefit to each region.

With its 100-degree summer days, California utilities find their heaviest demand for power is when the air conditioners click on. Conveniently, the summer is a slack demand period for the Northwest, and the dams along the Columbia produce more power than the region can use. With much of California's electricity generated from expensive oil, the Intertie offers the Southwest access to the Northwest's cheap surplus hydro power while providing added revenues for BPA and the region's utilities.

In fact, because of high runoffs and a large chunk of surplus power from the Northwest's dams, this year the Bonneville Power Administration is selling record amounts of power over the Intertie.

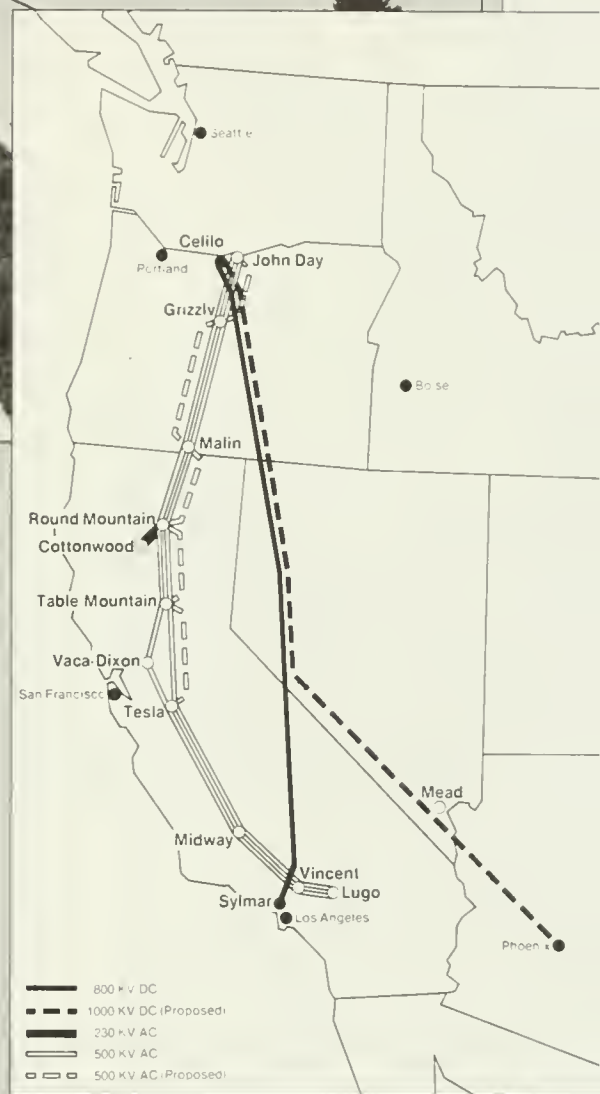
The Intertie consists of three sets of power lines, capable of handling up to 4,000 megawatts of electricity or roughly enough electricity for four cities the size of Seattle. Two of the lines carry alternating current (the same

type of electricity used for your household appliances) from a transmission station near The Dalles in Oregon to the Los Angeles area but can be tapped to serve areas such as San Francisco or Sacramento. The third line is direct current and requires DC to AC converters at either end. The DC line has the advantage of less loss of power as electricity is shipped down the line.

While the Pacific Intertie has provided the Northwest with many advantages, the single set of cross-regional transmission lines has created a perhaps unforeseen problem.

The Intertie is the only out-of-region set of transmission wires. In turn, California is the sole buyer of the Northwest's surplus power. The Golden State, however, can buy surplus power from other regions, meaning it can set up a competitive surplus market to drive down the cost of power.

The Northwest can, at times, find itself a hostage marketer: forced to either sell the power cheap or spill the water and lose the surplus power revenues altogether. For example, in June BPA was selling power to California for the average price of 5.71 mills a kilowatt-hour. California utilities, meanwhile, were using the cheap surplus to offset oil-fired electricity costing as much as 90 mills a kilowatt-hour.



In addition, federal law prohibits BPA from selling large blocks of power outside the region for extended periods without a callback provision, thereby lowering the value.

For Northwest energy planners projected power surpluses pose a problem for even the Pacific Intertie: Given the probable surpluses, is there a way the region can sell its extra power at something more than giveaway prices?

'For the moment, a projected surplus gives regional power planners some breathing space...'

(From page 18)

The answers aren't clear-cut. And as one senior private utility executive noted, they vary from utility to utility.

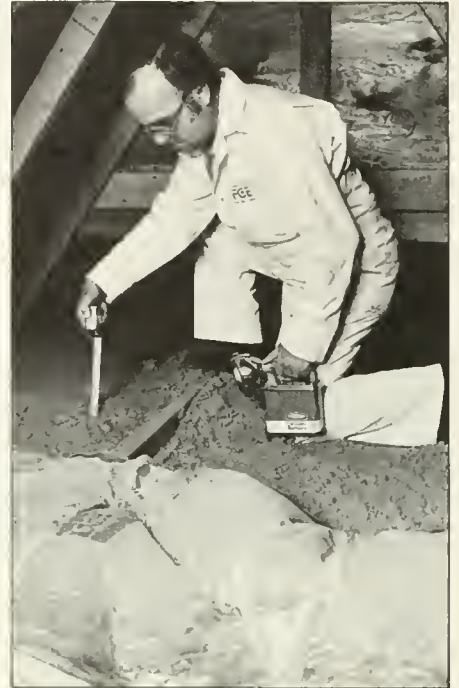
"If a utility is experiencing three or four percent load growth, it makes hellish good sense to develop conservation. You're developing conservation to offset hard path plants.

"If a utility has a flat load growth and excess resources and can't sell its surplus, that utility might want to postpone conservation for a time."

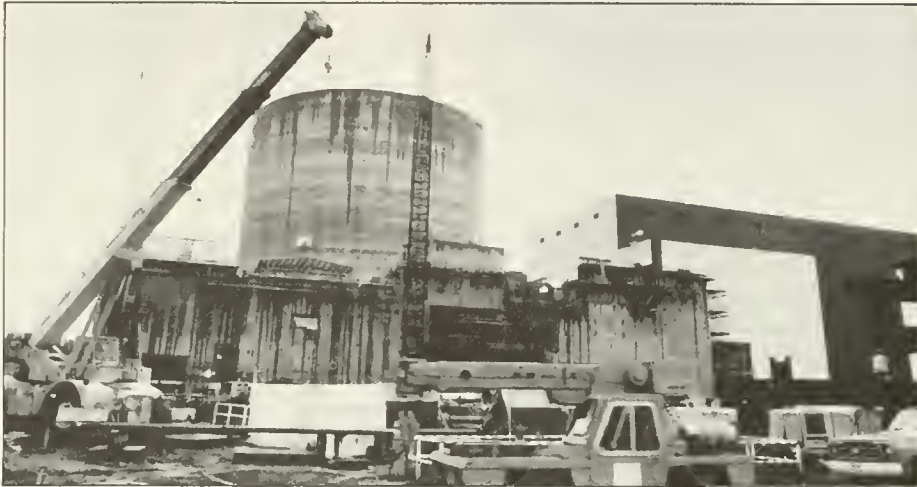
But in the long run, the executive added, "conservation is far and away the cheapest. It's no contest."

Congress recognized this when it passed "The Pacific Northwest Electric Power Planning and Conservation Act," triggering the Council's process now underway. For the moment, a projected surplus gives regional power planners some breathing space, a chance to fit conservation programs and development of renewable resources to the changing shape of the region's needs.

For like that new pair of shoes, the surplus will eventually wear out, too.



Changing energy realities: As the costs of nuclear plants like WPPSS 5 have skyrocketed, the region has turned to another resource: conservation.



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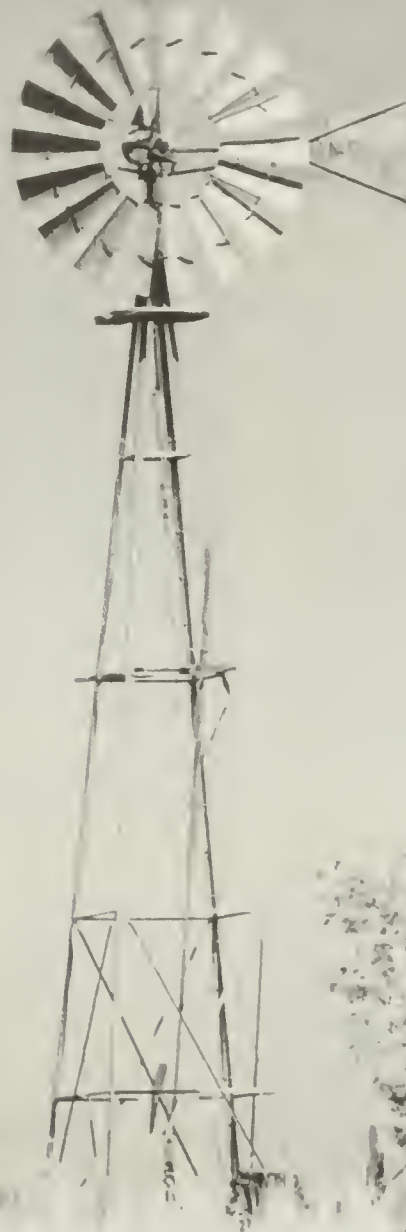
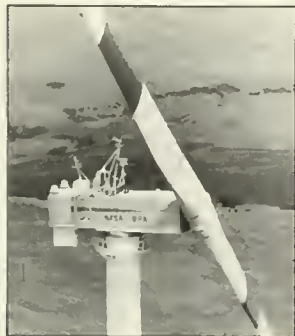
RENEWABLE RENAISSANCE

*Old energy forms are making
a resurgence in the NW*

The resource-rich Pacific Northwest may be standing at the threshold of a renaissance of renewable energy resources. Recent developments plus the priorities of the Northwest Power Act, which makes renewables a high priority resource for meeting future regional energy needs, suggest a comeback for

old energy forms updated with new technologies. The water power on a small stream that turned a mill wheel, the sun that warmed a southern facing house, the wind that pumped farm water, the wood-waste that fired a boiler to generate early industrial power, these and other energy forms are poised to once again pro-

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The Northwest Power Planning Council is required to develop a program to restore the Columbia's fisheries and a regional electric energy plan, to be carried out by the Bonneville Power Administration, emphasizing cost-effective conservation and renewable resources.

Cover photos: Don Lowe/Apture; Boeing (inset)

NOTICES

Council schedule revised

The Northwest Power Planning Council has revised its schedule for making decisions on issues related to the regional energy plan. The schedule was outlined in the last issue of *Northwest Energy News*.

The new schedule follows:

NOVEMBER 15-16 MEETING

Council Decision:

B5 — Conservation program evaluation and selection

Staff Presentation:

- A4 — Evaluation of key model sensitivities
- C3 — Constraints to resource development
- D4 — Surplus electricity marketing

Public Comment:

- B8 — Fuel switching/fuel choice
- B9 — Building codes and model conservation standards
- B10 — Surcharges (if, when, how?)
- C6 — Options — how will they work?

DECEMBER 1-2 MEETING

Council Decision:

- B4 — Rate designs as model conservation standards
- B8 — Fuel switching/fuel choice
- B9 — Building codes and model conservation standards
- B10 — Surcharges (if, when, how?)

Staff Presentation:

- B11 — Establishing conservation targets
- C7 — Development of resource and option targets
- E1 — Resource portfolio evaluation

Public Comment:

- A4 — Evaluating key forecast model sensitivities
- C3 — Constraints to resource development
- C5 — Interregional exchanges — how much and what cost?
- D4 — Surplus electricity marketing

DECEMBER 15-16 MEETING

Public Comment:

- B11 — Establishing conservation targets
- C7 — Development of resource and option targets
- E1 — Resource portfolio evaluation

The Council will schedule extra meetings in December to discuss the resource

portfolio. *Tentative* December meetings (subject to change) are:

- Dec. 1-2, Portland, Western Forestry Center
- Dec. 8-9, Portland, Hilton Hotel
- Dec. 15-16, Portland, Hilton Hotel
- Dec. 22-23, Seattle, South Auditorium
- Dec. 29-30, Portland, Hilton Hotel

Fish and wildlife program adoption and distribution set

The Northwest Power Planning Council will adopt its final Fish and Wildlife Program November 15 at the Hilton Hotel in Portland.

Copies of the final program will be available to the public in mid-December. Those who requested a copy of the draft program will automatically receive a copy of the final program. If you did not request the draft fish and wildlife program but would like to receive a copy of the final program, please call Beata Teberg at 1-800-547-0134 (in Oregon, call 1-800-452-2324).

Oregon toll-free phone available

Oregon residents seeking information or having questions on regional energy issues can now call the Northwest Power Planning Council toll-free from outside the Portland metropolitan area. The toll-free number is 1-800-452-2324.

Portland-area residents can call the Council at 222-5161. For those elsewhere in the region, the toll-free number is 1-800-547-0134. The phone lines go to the Council's central staff office in Portland. To reach individual Council members, see the list elsewhere on this page.

Errata

Due to a typographical omission, an error appeared in last month's *Northwest Energy News* on the story about BPA power sales contracts. The story should have said that Idaho Power Company "sought, and received, a promise from the Council that the power sales contracts would *not* be used as the vehicle to implement" the Fish and Wildlife Program.

I N T H E N E W S

Employment ranges — 1980 to 2000

(low/high ranges of
potential employees, in
thousands)

ALUMINUM

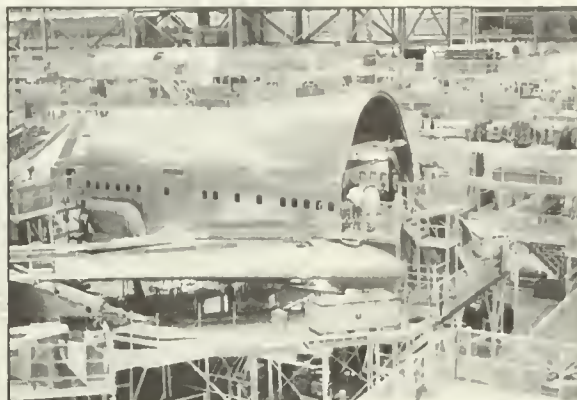
6.0

11.2

HIGH TECHNOLOGY

137.2

226.1



TRANSPORTATION

86.4

161.8

WOOD PRODUCTS

113.6

156.9

Region's future: Under the Council's high growth scenario, the aluminum and wood products industries recover from the current recession and the region experiences robust growth in transportation and high technology industries.

Planning for the best of times

Council sets high, low economic projections for region

From the onset nearly 18 months ago, members of the Northwest Power Planning Council have been grappling with the inherent uncertainties surrounding economic and energy forecasts. No matter what the given assumptions, the forecast of the future always seems to differ from the reality of the future. Nevertheless, forecasts of what the region's economy might do and what power the region will need provide tools for plan-

ning the energy future, a charge given the Council in the Northwest Power Act of 1980.

To cope with these uncertainties, the Council elected to develop its economic and energy forecasts in a high-low range instead of a specific, and often wrong, mid-point. And using the format, the Council last month adopted basic economic assumptions to be plugged into the energy forecast, economic assumptions

which if they proved true could see the Northwest experience record growth.

In the high range economic projections, the Pacific Northwest would gain more than 3.4 million employees between 1980 and the year 2000, a more than doubling of the number of employees added during the previous 20 years. This would set employment growth at 3.7 percent per year, making it the most robust period of economic growth in the re-

gion's history. In the high case scenario, the region's economy would quickly come out of the present recession and hit its long-term economic stride by the mid-1980s. Under this case, the region's traditional industries — lumber and wood products, aluminum, the aircraft industry, paper and agriculture — would all return to economic health. The greatest growth, however, would come in high technology industries, other light

manufacturing efforts and expanded trade and services.

In the low case, the region would add just under a million employees in the period, a growth rate of 1.3 percent per year compared to the historical average of 3.1 percent. Yet, even under this projection, the region grows slightly faster than the low-case national employment forecast. In the low growth outlook, the region's traditional industries are much slower to recover from the present recession and, in some cases, suffer long-term setbacks. For example, 30 percent of present aluminum capacity would be shut down and the Alumax Pacific plant proposed near Umatilla would never be built. The lumber and wood products industries recover only to 1980 employment levels and in the transportation equipment sector (which would include Boeing) employment falls 20 percent below the 1980 peak.

The high and low cases represent, according to Terry Moran, the Council's manager of forecasting, the best of times and the worst of times — two cases which are both probably unlikely to occur.

To assure adequate electrical supplies for economic growth, the Council says it will plan to meet the energy needs of the high-growth economic scenario.

But there are two caveats,



Changing times: Energy demand may not grow in lockstep with economic growth as less electricity-intensive industries expand rapidly, says Oregon's Roy Hemmingway.



Population boom: With employment projected to increase in the Northwest, the region's population is likely to follow a similar growth pattern.

said Council member Roy Hemmingway of Oregon. "Any forecast looking 20 years into the future is going to be wrong," said Hemmingway. "What we hope to do is develop a flexible array of energy resources that can be developed in increments as the need for power actually emerges. That way, we can have the power we need without running the costly risks of over- or under-building."

Hemmingway also cautioned about assuming a one-to-one relationship between economic growth and growth in consumption of electricity. "In even the high case, the bulk of the growth comes from less electricity-intensive industries, like electronics and service sector jobs. The energy-intensive industries, like the aluminum industry or the wood products industry, just don't grow as fast as the others. That's likely to mean total demand for electricity isn't going to run in lockstep with employment growth."

Deborah Kitchin, a Council staff economist, noted that because of rapid changes in the Northwest's economy and a lag in collecting information about employment trends, it may be necessary to revise the high-low range again before the Council's energy plan is produced next year.

The Council will now plug the economic assumptions into the energy forecast to develop a range for resource demand in Northwest electrical consumption.

Council hears comments on draft fish plan

After months of meetings and reams of recommendations, citizens, groups and agencies came before the Northwest Power Planning Council last month to talk about the first piece of the panel's power puzzle — a program to restore the fish and wildlife nearly destroyed by the region's hydro projects.

The comments ranged from praise to complaints, focusing on several key elements of the program, released in draft form in mid-September. Fisheries officials generally hailed the program as a sweeping new initiative to rebuild the badly depleted fish runs of the Columbia and Snake Rivers. Utilities, on the other hand, cautioned about the cost of the program, which will be picked up by the re-

gion's ratepayers already seeing record rate hikes. And comments varied as the Council moved from state to state.

In Idaho, where irrigation water is vital for agriculture, there were repeated concerns about water rights, despite the Northwest Power Act's declaration that nothing in the law would abridge water rights and similar assurances from Idaho Council members Bob Saxvik and Larry Mills.

Underlying the comments on water rights was the concern about where water for spring fish flows would come from. Council Chairman Dan Evans told irrigators that the fish flows would come from shifting the river flow normally reserved for power production.

Throughout the hearings in Oregon, Idaho, Montana and Washington, much of the comments zeroed in on the Council's proposal to speed migrating salmon and steelhead from their spawning grounds to the sea — a precarious route greatly slowed because of the Columbia River System's many dams. Under the Council's proposed water budget, a set amount of water would be available each spring to literally flush the small fish past the dams. The water budget would be shaped (so flows could be accelerated dur-

ing key times of the April 15 to June 15 peak migration period) by treaty Indian tribes and fish agencies and would be available even in low-water years. Under even low water conditions, according to the Council's proposal, fish in the upper reaches of the Snake and Columbia Rivers would be able to travel to the ocean in about 30 days.

But the river treaty tribes questioned whether that was good enough, and asked the Council to enlarge the water budget for the Snake River. Under the tribes' proposal, according to Tim Wapato, executive director of the Columbia River Inter-tribal Fish Commission, fish would make the seaward migration within 27 days during low water years. The tribes' proposal would cause another 150 megawatt reduction in the river's firm power production capability, bringing the total reduction to over 700 megawatts.

"Our work indicates that nothing less than what we have proposed will satisfy the requirements of the Act and of our member tribes' treaties," said Wapato.

But if Wapato and some environmental groups wanted to



Conflicting views: Tim Wapato, representing Columbia Basin tribes, wanted the Council's water budget enlarged for the Snake River. Don Barclay of Idaho Power, however, said he felt his utility was already meeting its fish protection duties.



know enough about the Fish and Wildlife Program's impacts on their power system to comment. Barclay said the utility didn't know the details of the water budget until recently and it would take weeks beyond the October 25 comment deadline for them to prepare their analysis.

Barclay said the utility believed its earlier settlement with various fish agencies was "the final step in restoring" the fish runs damaged by the company's Hells Canyon Complex of dams.

While the exact impacts of the water budget couldn't be gauged, Barclay said, the accelerated stream flows could reduce Idaho Power's power production by perhaps 300 megawatts during the summer months. Barclay doubted that the water losses could be replaced in kind, as the draft program proposes.

While not debating the specific measures of the program, Peter T. Johnson, head of the Bonneville Power Administration, said nevertheless that his federal agency had "serious reservations" about elements of the program and the role put forward for the Council.

The Council proposed creating a Fish and Wildlife Com-

mittee to study ways to enlarge the Council's water budget, the Idaho Power Company, which operates a series of dams, threw a potential roadblock in front of any water budget for the Snake

River and its tributaries.

Don Barclay, an Idaho Power vice president and a member of one of the Council's advisory committees, said the Boise-based utility didn't

Council weighing surplus power for irrigators and others

What do fish and irrigators have in common?

At first glance, not much. But thanks to the Northwest Power Planning Council's proposal for seasonal fish flows on the Columbia and Snake Rivers, both the region's ocean-bound fish and some of its farmers may benefit.

Under the Council's draft fish and wildlife program, the flow of the river would be accelerated during key spring migration periods — meaning the dams will be producing more electricity than the region normally uses.

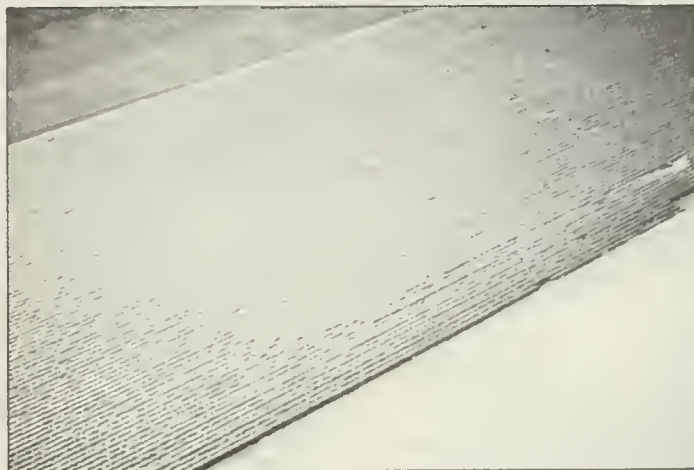
For some irrigators, this period (from April 15 to June 15) is one of their heaviest for watering crops. And for farmers these days, a substantial part of their costs is the price of electricity to pump the water. What might be possible is

for the irrigators to voluntarily give up a portion of their firm power contracts in exchange for the right to purchase seasonal surplus power at lower rates.

Excess power would be available during spring migration even in a low water year, said Edward Sheets, the Council's executive director. During other periods, the availability of surplus power would depend on water conditions.

For many farmers, the surplus power possibility comes just in time. With electric rates soaring and crop prices depressed, there are tough times down on the region's farms.

The region could benefit from the proposal as well, said Sheets, because it would free up firm power and keep the



Irrigator relief: The Council is looking at ways to sell irrigators cheaper surplus power and free up some of the firm power now used for crop watering.

economic benefits of the cheaper surplus power within the region.

The Council is continuing to

study ways to sell surplus within the region to farmers or others, said Sheets.

mittee, with one Council member from each of the four states, which would oversee implementation of the program and review specific funding requests.

But Johnson said he had trouble with the Council's role. "The answer is not for the Council to interject itself into day-to-day program implementation as a way of appraising and perfecting program elements," the Administrator told the Council at its Missoula hearing.

"The Act confines the authority to take implementing actions to protect, mitigate, and enhance fish and wildlife to federal agencies; it does not invest such authority in the Council," Johnson added.

Council Chairman Evans responded that the Council recognized the division of responsibility: "Yours is to implement; ours is to plan, and I suggest that those who implement follow the plan."

The agencies' independent responsibilities, said Evans, focus on implementation. "The real measure will be the degree to which the plan itself is carried out, and not independently assessed and redesigned and carried out in some other fashion."

Beyond the institutional roles, Johnson said BPA, which will finance those restoration measures related to federal hydroelectric projects, must weigh the cost-effectiveness of the various proposals and deal with the program in context of the agency's present financial constraints. In a late press statement, Johnson said the federal agency would do its "level best" to implement the Council's program.

The cost of the fish and wildlife program was the focus of much criticism at the hearings.

"Lately our own utilities have been spreading the word about the cost of our fish plan," Council vice-chairman Bob Saxvik said. "I wish they'd be equally honest about the WPPSS costs so the ratepayer can make a fair comparison."

Saxvik said that in 1983 ratepayers will pay approximately \$3.50 a month for their obligation for partially-



Classic battle: Privately-run Pacific Power is in a scrap with two public utilities over who will get Merwin Dam, a cheap renewable resource by any of today's standards.

completed WPPSS Plant 1.

According to Council estimates, the Fish and Wildlife Program could cost somewhere near \$160 million annually, or roughly \$2.25 a month for the average residential ratepayer.

And one ratepayer said he was already willing to pay his share.

"The utility companies came in here today and they tried to tell you that they spoke for me — the ratepayer," said Mike McLucas, a Central Oregon resident speaking at the Portland hearing.

"But they don't."

McLucas told how he had watched the fish runs decline and hoped they could be restored "before I cash in. You're my last hope. I pleaded at every hearing I could go to; I wrote letters to everybody I could think to write to about fish . . . and what have I got?"

Pulling a dollar out, McLucas told the Council, "As a ratepayer, I'm going to have to pay this per month to help restore these runs. I want you to hear loud and clear that I'm willing to pay it."

With that, McLucas left the greenback — the first dollar towards restoring the once great fish runs of the Pacific Northwest.

Merwin Dam battlefield in relicensing fight

It is, in part, the classic conflict between private power and public power. But the tug-of-war over Merwin Dam in Southwest Washington represents something more: a scramble to lay claim to a low-cost renewable resource.

At stake is a dam on the Lewis River which has been steadily and reliably providing power for Pacific Power & Light, the Portland-based private utility, for more than 50 years. And while Merwin isn't a mammoth project by today's standards, it would certainly cost millions to build new generation equal to the dam's 136 megawatts.

So the race is on. Pacific Power on one side, the Public Utility Districts of Clark and Cowlitz Counties on the other.

It began in 1979 when Pacific's license from the Federal Energy Regulatory Commission expired. The two public utilities, citing the Federal Power Act of 1920, filed to take over the dam and pay PP&L somewhere between \$8 and \$15 million to compensate for

the original investment in the project.

The federal law initially set up a licensing system for hydroelectric projects being developed in the 1920s, giving preference to public agencies if other conditions were equal. In 1980, FERC upheld the preference provisions of the Federal Power Act and said in the case of relicensing an existing project, the public agency had to show they would operate the project in a way that would benefit the public interest at least as much as the private utility license holder. With the potential ramifications to private utilities around the nation, PP&L and 33 other private utilities appealed the FERC ruling to the 11th Circuit Court of Appeals. Meanwhile, Clark and Cowlitz utility officials have pursued Merwin, hoping to garner some of its cheap, renewable power for their own customers.

The public utilities have been running advertisements in local newspapers, telling ratepayers — already reeling from mounting costs of the troubled Washington Public Power Supply System nuclear projects — Merwin Dam could lower their bills. For its part, PP&L has characterized the relicensing battle as "a takeover attempt" and one of the utli-

ty's backers, Portland Mayor Frank Ivancie, accused the public utilities of "piracy."

While the dam — part of a three dam complex on the Lewis River — makes up only 3.4 percent of Pacific's generating capacity, the private utility says it might cost as much as an additional \$128 million annually to get replacement power.

The FERC hearings concluded in early October. A ruling is expected sometime next spring. The case, regardless of the ruling, is probably headed for the federal appellate courts.

Whatever the outcome, the battle over Merwin Dam points one thing out clearly — the long-term value of a renewable resource.

Model efficiency code big saver for consumers and region

New homeowners could save nearly 60 percent on their electric heating bill and the region could defer billions of dollars for new coal or nuclear plants under a model energy-efficiency code developed by the staff of the Northwest Power Planning Council.

"Houses built to the proposed model efficiency standard would be twice as efficient in their electrical use as today's typical new home," said Edward Sheets, Council Executive Director. "Under the proposal, you could heat two houses for roughly the same amount of electricity used today to heat one house of the same size.

"For the region, that means we could save billions of dollars we would otherwise have to spend for building new conventional power plants."

The proposal divides the region into three climate zones, with the standards setting performance levels for new structures which would allow the builder to pick an array of methods to achieve the comparable efficiency (see table).

Proposed model standard

Annual space heating use, in kwh per square foot

Building Type	Climate Zone		
	1 (West of the Cascades)	2 (E. Wash./E. Ore. & Idaho)	3 (W. Mont.)
Single Family	2.0	2.0	2.4
Multifamily (5-plex or larger)	1.2	2.3	2.7

Under the proposed efficiency levels, a new 1,500 square foot home would use about 3,000 kilowatt-hours for space heating, costing, at a regional average rate of 3 cents per kilowatt-hour, \$90 annually to heat. This compares to the same sized house built to today's standards, which would use 7,500 kilowatt-hours, costing \$225 annually.

For new non-residential buildings, the efficiency standards would be based on the most recent version of the model energy code of the American Society of Heating, Refrigeration and Air Conditioning Engineers.

Applied only to new buildings, Sheets estimated the model standards could save approximately 650 megawatts of power, or roughly the operating capacity of a new coal or nuclear plant, under the Council's high growth projections.

To allow builders to make the transition to more efficient buildings and learn new construction techniques, Sheets said the staff is proposing that new efficiency steps be regionally financed through the Bonneville Power Administration for the first three years.

"Under the Council's high-case population forecast, nearly 60 percent of the housing stock in the year 2000 will be built between now and then," Sheets said. "It's important that these buildings be built to the highest efficiency levels economically practical for the region. After all, the efficiency level of each new structure will help determine how much power the region will need."

In addition to new build-

ings, the Council staff proposal also calls for full payment of all physically feasible efficiency steps for existing electrically heated structures, residential and non-residential, which are regionally cost-effective. The particular measures would be determined by on-site audit. The cost of the audit would be paid by the region as part of the program's cost.

The staff also proposes that BPA reimburse agencies with responsibilities for building or energy-efficiency code enforcement, picking up the cost of implementation and inspection for those agencies which adopt the model standards.

While the standards for new construction would require some change in present building practices, Sheets said the only noticeable difference between a home built now and a model efficiency home "would be that your window sill would be a bit wider."

The staff proposal was presented before the Council on its November 3 meeting as part of the comprehensive energy plan being drawn up by the eight-member panel. The Council is seeking public comment on the proposal.

"This is one of those cases where everyone can win," said Sheets. "The consumer gets a more energy-efficient house that's cheaper to heat. The builder gets paid by the region for building a more efficient home that's more financially attractive to the potential homebuyer. And the region gets the power savings — and the dollar savings — of more efficient new housing stock. We all come out ahead."

Council weighs inverted rates for conservation

For years, it has been a topic of little concern in a land awash in low-cost power. But today, more and more utilities, regulatory officials and consumers are talking about electric rates and how they should be structured.

The Northwest Power Planning Council joined the debate last month with a staff proposal for wholesale and retail rate designs to encourage conservation — and it quickly became the shot heard around the region.

"There is a very strong negative feeling to this proposal by public power," said Jim Boldt, director of the Washington Public Utility District Association. Jay Waldron, an attorney representing the Northwest Public Power Association, accused the Council of trying to usurp local control of rate making without the legal authority.

At the center of the controversy is a proposal for inverted rates for the residential sector, with a portion of the bills priced at the cost of new resources, or marginal cost. The Council is reviewing the feasibility of inverting commercial and industrial rates.

"With a design approach, those who do not conserve get a direct and continuing incentive to take some action," says Wally Gibson, the Council's program manager for rates. Under the proposed rate design package, Gibson said, those individuals or businesses which had taken some conservation steps would probably avoid the last, high-priced block of power.

Most of the Northwest's major private utilities and several larger public utilities, such as Seattle City Light and the Eugene Water & Electric Board, already have some form of inverted residential rate structure. Most of the region's small public utilities, however, charge customers a flat or average rate regardless

of the amount of power used.

Gibson told the Council during a recent meeting that an inverted rate structure would also encourage consumers to respond to the changing — and escalating — cost of electricity because rates would more closely reflect the increased costs of new power generation of any type.

The staff proposal, being considered as part of a model conservation package, drew its sharpest fire from some of the region's public utilities.

But Council members cautioned the utilities about over-reacting to the proposal. Charles Collins, a Washington member, said the only burden facing a utility would be to show it could save an equivalent amount of power. "And you can do that any way you want," Collins added.

In addition to the retail rate proposals, the staff proposed a new surplus power policy to encourage use of seasonal excess power within the region, such as in irrigation or multiple fueled boilers, before selling it out-of-region.

The proposal also calls for a tiered, or inverted-type, rate for the wholesale power sold by the Bonneville Power Administration which would more accurately reflect the cost of new resources and encourage utilities to pursue conservation programs.

It also calls for a low-water contingency surcharge, to be passed on to retail utilities, if the region experienced a water shortage and was forced to buy high-cost stopgap power.

The package goes before the Council in early November for consideration on whether it should be adopted into the panel's long-range energy plan.

Workshops focus on key energy issues

Workshops were held last month by the Northwest Power Planning Council, drawing citizens from around Montana, Washington and



Prose on power: Working group discusses issues at Council citizen energy workshop.

Oregon to discuss major energy issues prior to release of the Council's draft regional energy plan early next year.

The Montana workshops focused on how much electrical power is enough, how should electricity be priced and how electricity could be conserved.

Responses from Butte residents to the first question about electricity supply ranged from "Build fewer power plants and make better use of what we have" to "Better to have too much power than not enough."

First priority for developing possible power supplies was small-scale alternative energy sources. Number two was a suggestion that there should be a shorter time between planning and building energy plants.

Butte workshop participants favored using incentives rather than regulation to promote conservation, with many feeling that regulations were expensive. In addition, many people thought that increased rates would be adequate incentives, although actually using the electricity price structure to encourage conservation got few votes.

The workshops in Spokane and Seattle focused on three approaches to achieving residential conservation: regulatory, incentive and market. After a panel discussion on the issues, working groups discussed the alternatives and came up with recommendations which were presented to Washington Council members Dan Evans and Chuck Collins.

The recommendations included:

- Mandatory appliance efficiency standards should be adopted, and phased in gradually.

- Inverted electricity rates should be established, also phased in gradually.

- Rental housing should be required to be weatherized by a certain date.

- Special programs should be offered to weatherize low-income homes. Opinion was divided on the types of programs to be offered and the source of payment for the programs.

- Building codes for new dwellings should be tougher, based on the marginal cost of electricity.

- Utilities should offer incentives — zero or low-interest loans or direct payments — to homeowners to encourage them to weatherize.

The Oregon workshops dealt with a variety of planning and conservation issues. The issues and recommendations including:

- Planning uncertainty should be dealt with by building small facilities with short lead times and by improving forecasting techniques.

- During a surplus, continue to develop and implement conservation programs. Build small-scale renewable resources, not new large-scale power plants.

- Conservation programs should be directed toward all existing housing, regardless of ownership or heating fuel, and they should utilize incentives, direct assistance, education and marketing rather than mandatory measures.

- Building codes for energy

efficiency should be mandatory in the region, and should provide incentives to exceed the building code's efficiency.

- Electricity rates should not be used as a conservation measure.

"I was really pleased by the comments," said Gerald Mueller, a Montana Council member. "We're finding the public has a number of good ideas about how we can better plan our energy future."

Washington solar conference held

Focusing on ways to promote solar energy and conservation, more than 120 people attended the fourth annual conference of Citizens For a Solar Washington.

The conference included workshops on planning, organization, and more effectively influencing energy policies in local areas, utilities, and at state and regional levels.

Workshops also focused on the "model plan" developed by the Northwest Conservation Act Coalition (of which CSW is a member). The plan calls for aggressive conservation in implementing the Northwest Power Act.

Richard Conlin of the Northwest Conservation Act Coalition feels conference participants wanted to know how to get the Model Plan implemented. "It looks good to them on paper, but they want to know when all this will happen. They found out how to get busy with their PUD, to find out what their utilities are doing. The conference gave them tools to work with."

RENEWABLE RENAISSANCE



Big wind: Three giant Boeing-built wind turbines sit on the Washington side of the Columbia River Gorge. Together, the prototype wind machines can produce enough electricity to serve about 2,000 homes.

(From page 1)

vide the energy for Northwest homes and businesses.

- **LIBBY, MONTANA** — The Kootenai Medical Clinic here is all lined up with fuel for winter — sunlight to power its hybrid solar-ground source heat pump. Like last year, Dr. Richard Irons expects to make it through winter without using the small electric heat system he installed for back-up.

- **LAKEVIEW, OREGON** — Electricity produced from low-temperature geothermal wells here will be sold by private developers if they can find a buyer. The well-head generators will use 200°F ground water to produce 300 to 400 kilowatts per hour.

- **SULTAN, WASHINGTON** — Electricity from a water storage reservoir will be the first hydroelectric project owned and operated by the Snohomish County Public Utility District when it is completed in the spring of 1984. It will generate 112

megawatts of peaking power and 50 megawatts of firm electricity.

- **CAPE BLANCO, OREGON** — A feasibility study of wind power is underway for this blustery coastal area. If things work out, as much as 80 megawatts or more of electricity could be generated. Up the Coast near Coos Bay, Pacific Power and Light is negotiating with a private firm to buy the electricity from 50 25-kilowatt wind machines.

- **BOISE, IDAHO** — For the past 90 years, hot ground water has supplied heat to 250 homes here through a small geothermal heating district. It's being renovated and expanded to cover an additional 200 homes. The City of Boise is completing work on another small heating district to serve 50 mostly commercial buildings. The state is finishing up a geothermal heating system for eight office buildings, including the Capitol.

- **BURNS, OREGON** — The Harney Electric Cooperative and the Edward

Hains Lumber Company are ready to develop a 40 megawatt wood-fired cogeneration project. With a site approval certificate from the Oregon Energy Facility Siting Council, and equipment supplied by General Electric Company, the project needs development capital and a purchaser for the power to trigger construction.

There's more.

Hydropower, for six decades the staple of Pacific Northwest energy supplies, may well re-emerge as one major new source of regional energy. Throughout the region, filings have been made for sites with an "on paper" potential of 10,000 megawatts of small-scale hydroelectricity. Experts say the potential for producing electricity from geothermal wells is massive. Add in solar, wind, and biomass, and the region appears to be just as rich in yet untapped renewable resources as it was in 1900 when engineers and investors viewed the Columbia and Snake Rivers and dreamed

Renewable resource proponents view big coal and nuclear plants as modern-day dinosaurs.



Small hydro; big potential: While most of the large damsites have been used, Northwest hydro experts say there is enormous potential for small-scale projects.

of developing the large hydroelectric projects now built.

This rosy view of renewable energy resources for the Northwest, however, has a thorny side. Proponents criticize the Bonneville Power Administration for not putting more money into developing renewable resources now. For its part, BPA says given the large surplus of electricity from existing resources, it doesn't make sense to acquire more now. Other energy planners, sounding a note of skepticism, say additional research and demonstration is needed to find out how much *actual* power these renewables can produce and which technologies are the most cost-effective.

The regional energy plan, being put together now by the Northwest Power Planning Council, will help answer some of the questions surrounding the development of renewable resources. Due in final form next April, the plan will chart an energy course for the region, specifying which resources are to be developed, when, and how. Two important determinations will drive this plan. One is the Council's forecast of regional need for electricity. The other is the cost-effectiveness of new resources on the menu of choices. Expecta-

tions for the plan have already been felt. The Spokane-based Washington Water Power Company, for example, while proceeding with plans to site a 2,000 megawatt coal plant at Creston, Washington, has said it will build the facility only if it is needed and a part of the Council's energy plan.

But projects like the Creston plant, or the nuclear plants of the Washington Public Power Supply System, are viewed as modern-day dinosaurs by the proponents of renewable resources. They say the evidence is in to prove the case for developing renewable energy, and they marshal an array of data and arguments in making their case.

HYDROELECTRIC

A national survey conducted by the Army Corps of Engineers shows that half the nation's hydroelectric potential lies within the four-state Pacific Northwest region, reports Gil McCoy, hydroelectric specialist with the Washington State Energy Office. McCoy labels as "myth" the notion that we've used up the hydroelectric resources in the region.



"What we've used up is the very large-scale sites (in the 1,000 megawatt range) on the Columbia and Snake," said McCoy. "Looking over the region, we've developed the two large rivers and largely ignored the rest."

In Washington State alone, McCoy said, there have been 248 filings on sites where small-scale hydropower projects might be developed, projects ranging from 100 kilowatts up to 30 megawatts:

179 new sites, mostly high-head, run-of-the-river projects that have virtually no reservoirs behind the dams;

33 projects at irrigation dams, where drop structures and wasteways would permit installation of generators to produce power;

17 projects would involve rebuilding once-used hydroelectric sites or installation of additional turbine generators at existing sites;

14 projects could produce electricity at dams built for flood control or recreation purposes; and

5 projects could generate power by installing turbines on existing water supply lines.

Although it is unlikely that all of these

projects would be developed, McCoy said their total electricity production *potential* is 1,275 megawatts.

McCoy said 19 filings for medium-sized projects of the type at Sultan, Washington, carry a potential hydropower output of 2,070 megawatts. At Sultan, the Snohomish County PUD is building a powerhouse at the end of a long tunnel that will carry water from Culmback Dam, operated by the City of Everett as a water reservoir. By elevating the earth/rockfill dam an additional 62 feet, and building the tunnel and power house, the water reservoir will produce 112 megawatts of peaking power and 50 megawatts of average or baseload power. Another medium-sized project is being built by Seattle City Light, Tacoma City Light and the South Columbia Basin Irrigation District. This 74 megawatt project near Moses Lake, Washington, will use flows through irrigation canals to power turbine generators.

GEOTHERMAL

Thanks to the volcanic roots of mountains in the Northwest, this region is dotted with hundreds of potential geothermal sites where once-active volcanoes left behind pockets of hot earth and ground water. According to Gordon Bloomquist, geothermal specialist at the Washington State Energy Office, as many as 150 cities in Oregon, Idaho, Montana and Washington may be as lucky as Boise in that they are located near potentially productive geothermal fields.

The State of Idaho's Capitol Mall project will provide about 90 percent of the 700,000 square foot complex's heating needs with geothermal energy. Idaho Public Works Administrator Brian Chase predicts that in 1982 the project will save the state \$150,000 in natural gas costs. The only costs to maintain the project will be electricity to run the well pumps and maintenance on the piping system.

"The nice thing about geothermal," observed Bloomquist, "is that it's an indigenous resource, it uses off-the-shelf technology, and it can use many technologies that have proved effective."

Bloomquist describes as a "break-through" the use of well-head generators to produce power from low-temperature geothermal sites. The Lakeview, Oregon



Capitol idea: The State of Idaho is finishing its Capitol Mall geothermal project to provide heat for 700,000 square feet of office space.

project is one good example. Until recently, low-temperature ground-water was used mainly in district heating systems like those in Boise. But work by technicians in Israel produced equipment to generate power from solar hot water ponds, according to Bloomquist. And the shift to using this equipment at low-temperature geothermal sites came as a logical next step.

Using the geothermal resources in our region could "add substantially to the energy resource in our area," Bloomquist said. Several Northwest utilities agree.

The Eugene Water and Electric Board, Northwest Natural Gas, and Seattle City Light are among those exploring for geothermal resources.

WIND

"We could be looking at 80 megawatts," says Angus Duncan, director of the WindFarms, Inc., project at Cape Blanco on the southern Oregon Coast. The feasibility study will examine meteorological, geological and engineering feasibility for installing wind machines at the site. The \$1 million cost for the study will be shared by Bon-



neville Power Administration (80 percent), WindFarms (10 percent), and by Portland General Electric and Pacific Power and Light (5 percent each). Duncan said there is great wind potential in the Northwest. His study will take 1½ to 2 years to complete.

The Boeing Company, under contract with the National Aeronautics and Space Administration, has built three 2½ megawatt wind machines at the Goodnoe Hills site near Goldendale in southern Washington. Bill Engle, of Boeing Engineering and Construction Company, said the machines have proven themselves technically. However, he said, "the jury is still out" on the economics of the wind-power experiment.

SOLAR One reason for the great potential of solar energy is that it can be harnessed in so many different ways. Design of buildings for passive solar, active systems that employ a variety of mechanical devices, and passive/active hybrids offer a wide range of choices for exploiting solar energy.



Passive solar energy applications, through siting, designing and building to take the most advantage of available sunlight, are on line now. "Yes, we are ready with passive solar buildings," says John Reynolds, professor of architecture at the University of Oregon and also a practicing architect at Equinox, a company he owns in partnership in Eugene.

Reynolds designed the Lane Energy Center in Cottage Grove. This one-story, 2,100 square foot building, houses a store for energy conservation products and a restaurant. "The owners are delighted," says Reynolds, who noted that the passive design for heating and cooling has worked: the hottest the building has gotten is 75° F, the coolest no lower than 62° F. Reynolds said many contractors lack experience with passive solar designs and need to learn about the techniques of constructing such buildings. But the designs themselves are ready to go.

At his clinic in Libby, Dr. Irons said he is "quite pleased" with performance of his solar-ground source heat pump system, which has cut his energy bill 30 percent. His 2,000 square foot building was "super insulated" when built and received an energy conservation award from the Pacific

Power and Light Co. The solar-ground source heat pump system is an Alten-Solar Tech system by Alten Northwest of Seattle. Dr. Irons said he helped finance its installation by using both Montana and federal solar tax credits.

BIOMASS The timber-carpeted Northwest had many cogeneration installations in the late 19th and early 20th centuries when lumber mills used mill wastes to generate their own power. This resource is another potentially large producer of electricity, according to Richard Durham of the Oregon Department of Energy. Head of the Pacific Northwest Bio-conversion Task Force, Durham said the 40 megawatt Haines-Harney cogeneration project, costing \$38 million to build, could produce power at a price competitive with conventional resources. Another cogeneration project, sponsored by the Eugene Water and Electric Board and the Springfield Municipal Electric Utility at Weyerhaeuser's big mill at Springfield, would generate 50 megawatts. Washington Water Power Co. is in the process of engineering and constructing a 40 megawatt steam electric generating plant at Kettle Falls, Washington, that will be fueled with wood waste from sawmills. All over



Wood energy: Among the forms of biomass energy making a comeback are wood stoves. But the stoves aren't without problems, such as air pollution.

the Northwest there are potential projects to use the region's vast forests to generate power.

While the outlook for renewables may be bright, it must be tempered by the need to solve some remaining difficulties. Solar energy, passive and active, can be

expensive. Active solar systems have been plagued by equipment breakdowns. Wind projects do not always yield the amount of power projected. Geothermal energy is very site-specific, dependent upon the temperature and chemical composition of ground water. Although the supply of slash in the forests is large, gathering the slash for cogeneration use is still very expensive. Developing small hydroelectric

Small town strikes a geothermal gold mine

EPHRATA — A mini geothermal heating district will come on line at the Grant County Courthouse here in mid-November, the culmination of a project that began as a search for domestic water and wound up as an energy project.

Back in the spring of 1978, reports Ephrata City Engineer Jim Churf, a city crew was drilling for potable domestic water. They found good, clean, potable — but also hot — water. "We put our heads together," he recalled, "and we came up with the idea that maybe we could use the water for heat. The old Courthouse (oil-fired) boiler and steam-heat system needed to be replaced anyway."

With help from the Washington State

Energy Office, the Oregon School of Technology and a \$468,000 U.S. Department of Housing and Urban Development Innovative Grant, Churf's project drilled its well to 1,850 feet where they reached hot water at 84°.

The water was quite low-temperature for direct heating application so a dual heat-pump system was designed. The first heat pump will raise the water temperature from 84° to 120° for normal heating of the Courthouse. A second heat pump will be available for back-up and for further raising the temperature to between 140° and 160° when especially cold weather requires this extra peaking heat boost.

The system is large enough so that it will heat the new law and justice center

to be built soon next to the Courthouse, Churf said. And it is being tested in two low-income houses to see how it might serve a single family type home. Nearby merchants are eager to connect to the system, Churf reported. But he added that he's cautioned them from moving too fast. "Let's wait first and see how well the system works," he said.

By the way, the unexpected energy benefits from the project did not shove aside the original purpose of finding a potable water supply. Churf said one unique aspect of the project is that after the hot water is used for heating, it will be sent into the regular water system for domestic use.

projects carries environmental risks and now must take into account the "hard constraint" of the Northwest Power Planning Council's program to replenish the Columbia River Basin's fishery.

Proponents acknowledge these problems. They argue, however, that most can be overcome if enough resources are brought to bear to get on with the job. Much of the blame for lack of progress in developing renewable energy resources in the Northwest, they say, lies at the feet of BPA.

"Bonneville's proposed near-term resource policy has put a tremendous damper on development of renewables," said Durham. "Nowhere in Bonneville do you have anyone interested in developing renewable resources."

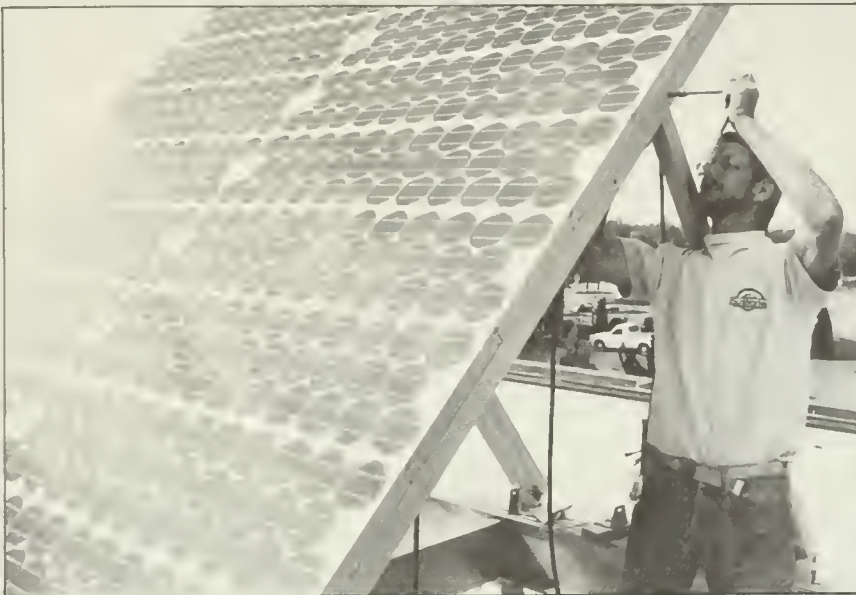
David Philbrick, Durham's colleague at the Oregon Department of Energy, outlined the case against Bonneville on the question of renewables. "For starters we had to put together for Bonneville a list of its own renewable programs," said Philbrick.

Durham and Philbrick say BPA lacks a willingness to develop renewable resources despite a plethora of opportunities around the region to finance such projects. "Bonneville is looking creatively to sell WPPSS power to California, but not creatively to sell renewable power to California," said Philbrick.

McCoy echoed this criticism of BPA. Speaking of developing small hydroelectric sites in the region, McCoy said under BPA's proposed near-term resource policy "in the next few years we're going to see very few (small hydro dams) coming on line."

Last summer BPA issued a proposed policy that would restrict its acquisition of new electric resources to certain conditions. Any acquisition could have only minimal impacts on BPA cash flow requirements and the environment. Most of the power produced (or saved in the case of conservation) would have to come on line in the periods of forecast deficit (late '80s or early '90s), take several years to realize full production/savings potential, and not cost more than 3.5 cents per kilowatt-hour in constant 1982 dollars.

BPA's proposed near-term resource policy pledged that in 1983 program specifics would be developed for acquisition of small renewable resources but that a lim-



Going solar: A worker tightens down a final nut on the Bonneville Power Administration's photovoltaic installation in Redmond, Oregon.

BPA installs photovoltaic panels; seeks sunpower for substation

The Bonneville Power Administration last month installed one of the largest photovoltaic power systems in the Pacific Northwest. The project is one of BPA's ongoing efforts to develop renewable resources for the region.

The system consists of 1,120 square feet of solar cell panels. They are being assembled in two 56-foot-long rows on the roof of a BPA maintenance building at BPA's Redmond substation near Redmond, Ore.

Sunworks, Inc., of Portland is the general contractor for the project, which will cost about \$196,000. The system is to go into operation in November.

Craig Mortensen, a BPA electrical engineer, said the system should generate about 15,000 kilowatt-hours per year. It will average about 20 kilowatt-hours a day in winter and about 60 kilowatt-hours a day in summer.

The photovoltaic system will be connected to BPA's transmission grid. When the solar panels produce more power than the building is using — as on weekends — the extra power will flow into the grid.

BPA has had photovoltaic systems in operation for several years, particularly in remote areas where it is too costly to hook up with conventional power lines. But the Redmond system is unusual because of its size and because it will connect with a regional power supply system.

"The beauty of hooking into an already existing power system is that it enables a solar user to get by without expensive storage facilities, such as batteries," Mortensen said. "This feature may make the system attractive for many businesses — if we can show that it will operate successfully."

ited number of small-scale projects would be acquired as part of its effort to develop and test the components of a full-fledged program.

"We intended to draw a balance," said Jim Curtis, Acting Resource Acquisition Manager at BPA's Power Management Division. "We want to balance the needs of the ratepayers in a deficit period versus the needs of ratepayers in a time of surplus. It's a tough one to call." BPA is being "cautious due to a high level of uncertainty," he added.

Despite the demonstrated promise of several renewable resources in the region, Curtis said uncertainty remains over just how much *actual* power can be produced from renewables. "Even the assessment of the potential is in dispute," he said.

Curtis outlined the reasons for BPA's caution with respect to acquiring new resources, renewable or otherwise. Given the regional surplus, he said, the power is

not needed now. The region will need more electricity when power deficits occur in the late 1980s or early 1990s as Bonneville now forecasts, he said. Secondly, Curtis said Bonneville must develop "a coherent marketing and intertie policy" for selling power to California, deciding who can sell power over its transmission lines to the Golden State. A third matter is cash flow. Curtis said Bonneville wants to hold down rate increases in this time of surplus as ratepayers in the region are already being hit hard by a depressed regional economy and by substantial rate boosts as WPPSS costs are passed through the BPA rate structure. And finally, Curtis stressed that Bonneville is awaiting the Northwest Power Planning Council's energy plan to see what it calls for in the area of new resource development.

"We're reticent to move forward too rapidly until the Council makes some of its decisions," he observed.

If Durham and Philbrick are critical of BPA, they see time as on their side in the argument over development of renewable resources. For one thing, the Northwest Power Act sets statutory priorities for resource acquisition: conservation first with a 10 percent price bonus; renewable resources second; cogeneration third; and, conventional resources (such as coal and nuclear) last.

"The site-banking concept needs renewables," said Durham of an idea that Council members like Washington's Chuck Collins and Oregon's Roy Hemmingway have discussed. The idea is to study and plan for new electric energy resources so they are "on the shelf" ready to be used when needed. Most renewable resources are small in scale, compared with a nuclear or coal plant, and require less lead time to plan and develop. Under the site-banking concept, selected re-

Solution to the resource puzzle?

Power planning has always faced some kinds of uncertainty: What will be the demand for power? When will new resources come on line? How much water will we have to run the dams?

The Northwest Power Planning Council has developed a planning philosophy to deal with the uncertainties of power planning. This philosophy emphasizes a forecast range of possible electric demand rather than a single point forecast. It also emphasizes flexible resource planning through the use of "options."

A resource option will be an investment by the region in the early stages of developing a resource. Options will be exercised, creating a resource with shorter lead time, if energy demand turns out to be high. If demand turns out to be low, the chosen resource will be placed "on the shelf" to be used when needed.

Future resource development will thus involve four stages:

Stage 1. Planned Option. The Council identifies the most cost-effective electric energy resources by examining such factors as cost, timing, reliability, environmental costs and benefits, and availability. These cost-effective resources will be included in the Council's regional energy plan.

Stage 2. Acquired Option. BPA follows the Council's plan and negotiates with a resource developer and purchases option.

Stage 3. Resource Acquisitions. The Council recommends that the op-

tional resource be developed based on current conditions and forecasted energy demand.

Stage 4. Resource Completed. BPA acquires the energy supplied by the resource.

There are several different types of resource options.

1. A resource could be sited, licensed, and designed but not constructed (site-banking).
2. A resource could be acquired before the region needs the power and then sold outside the region until a later time when the power is needed.
3. A demonstration project, perhaps for a conservation program, could provide information about the cost and the amount of energy provided by a resource.

There are many unanswered questions — regulatory, legal, institutional — that need to be resolved before options can be used effectively by the region. The Council is working with the

region's utilities and resource developers to resolve these issues.

"The key question," says Randy Hardy, "is whether this offers a new course for energy planning in the Northwest. In other words, will it really work?"

Hardy, executive director of the Pacific Northwest Utilities Conference Committee, has begun studying the resource options idea to determine all the steps that would need to be taken to bring the idea into practical reality.

Hardy said that for the resource options concept to work, the Council, the Bonneville Power Administration, and utilities all have a series of steps to take. For example, the Council needs to develop a method for analyzing which options are cost-effective.

If the idea works, says Washington Council member Chuck Collins, resource options could provide an important "insurance policy" against the uncertainties of power planning.





Renewable turning point: Renewable resource advocates say advancement of these resources could usher in the next energy era.

sources would be designed, sited and licensed and placed "on the shelf" to be completed when the need arises.

This idea is among those being worked on by the Council and its staff as part of the energy plan preparation. Meeting a cost-effectiveness test, of course, is a statutory requirement the Council must fulfill in putting together the plan's list of resources to acquire. While many proponents of renewable resources argue with special zeal for developing solar, wind and biomass projects, the test in the end will be economic and practical technical applications. As Council Chairman Dan Evans, Washington, noted at the outset, the Council's energy plan will seek to provide energy efficiency and stability and will not be a blueprint for social reform.

Perhaps a brake more powerful than BPA's near-term resource policy with respect to development of renewables is the dramatic shift of federal emphasis. Under President Jimmy Carter, there was a concerted support of programs and rhetoric to develop renewable energy resources. President Reagan has not only cut out the money for such programs, like un-funding the solar bank,

but he has moved the Presidential pulpit from renewable energy resources to nuclear projects, like the Clinch River Breeder Reactor, with money to back up the words.

The shift away from renewable energy resource development by the federal government worries many who want more research in such areas as the high-tech solar cell. "This really should be a national priority," observed Philbrick. "We could lose this high-technology to the Japanese. Solar photovoltaic cells could usher in the next energy age."

Duncan, who served in Washington, D.C. as energy liaison under former Transportation Secretary (and Portland Mayor) Neil Goldschmidt, offered the same kind of criticism regarding wind technology.

"It's analogous to development of the microcomputer with the support of the Pentagon," Duncan said. "Several years ago, the Pentagon invested heavily in data processing, allowing the computer companies to learn more about the technology. This military market has led to the very rapid buildup of the small computer industry. If Bonneville were to provide such a market for wind machines, we could go through the necessary learning curve to produce and bring down the cost

of wind machines. BPA is one of the few utilities in the country that can provide a market for wind energy and drive down costs."

New technologies may be required to harness wind, biomass, solar and geothermal power for today's applications. But governmental policy can't change the fact that many of the touted renewable resources in the Northwest are not new ones. Rather, they are energy forms that were used effectively in earlier times. Their utility has already been tried and proved for agriculture, industry and in the home.

Renewables offer one advantage of being flexible. They can be developed in small increments, relatively quickly. Many renewable resources may require little capital to develop, use simpler equipment, and be easier to maintain. Little or no fuel costs means low operating costs. Because they are dispersed, a breakdown is less catastrophic when compared with large central station generating plants. Long ago, most of the energy used in the Pacific Northwest came from these smaller, simpler resources. It may be that way again in the future.

Still, for the time being, the renewable resource picture in the Northwest focuses more on potential than reality.

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DRAFT FISH AND WILDLIFE PROGRAM

- ☐ Please send me a copy of the Council's draft fish and wildlife program.

ISSUE PAPERS

Please send me the following issue papers. (Some issue papers are not yet available.)

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- ☐ A1 - Economic and demographic assumptions
- ☐ A2 - Fuel price forecasts
- ☐ A3 - Double counting of conservation
- ☐ A4 - Evaluating key forecast model sensitivities

Conservation

- ☐ B1 - Do we need avoided cost?
- ☐ B2 - What are conservation savings?
- ☐ B3 - Should we acquire conservation during periods of surplus?
- ☐ B4 - Rate designs as model conservation standards
- ☐ B5 - Conservation program evaluation and selection
- ☐ B6 - Agricultural conservation programs
- ☐ B7 - Industrial conservation programs
- ☐ B8 - Fuel switching — should we go get it?
- ☐ B9 - Building codes and model conservation standards
- ☐ B10 - Surcharges (if, when, how?)
- ☐ B11 - Establishing conservation targets

Resources

- ☐ C1/C2 - Resource ownership and financing assumptions/capital availability and cost
- ☐ C3 - Constraints to resource development
- ☐ C4 - Incorporating environmental impacts in resource plan
- ☐ C5 - Interregional exchanges — how much and what cost?
- ☐ C6 - Options — how will they work?
- ☐ C7 - Development of resource and option targets

Reliability/Power System Optimization

- ☐ D1 - Fish and wildlife impact on hydropower
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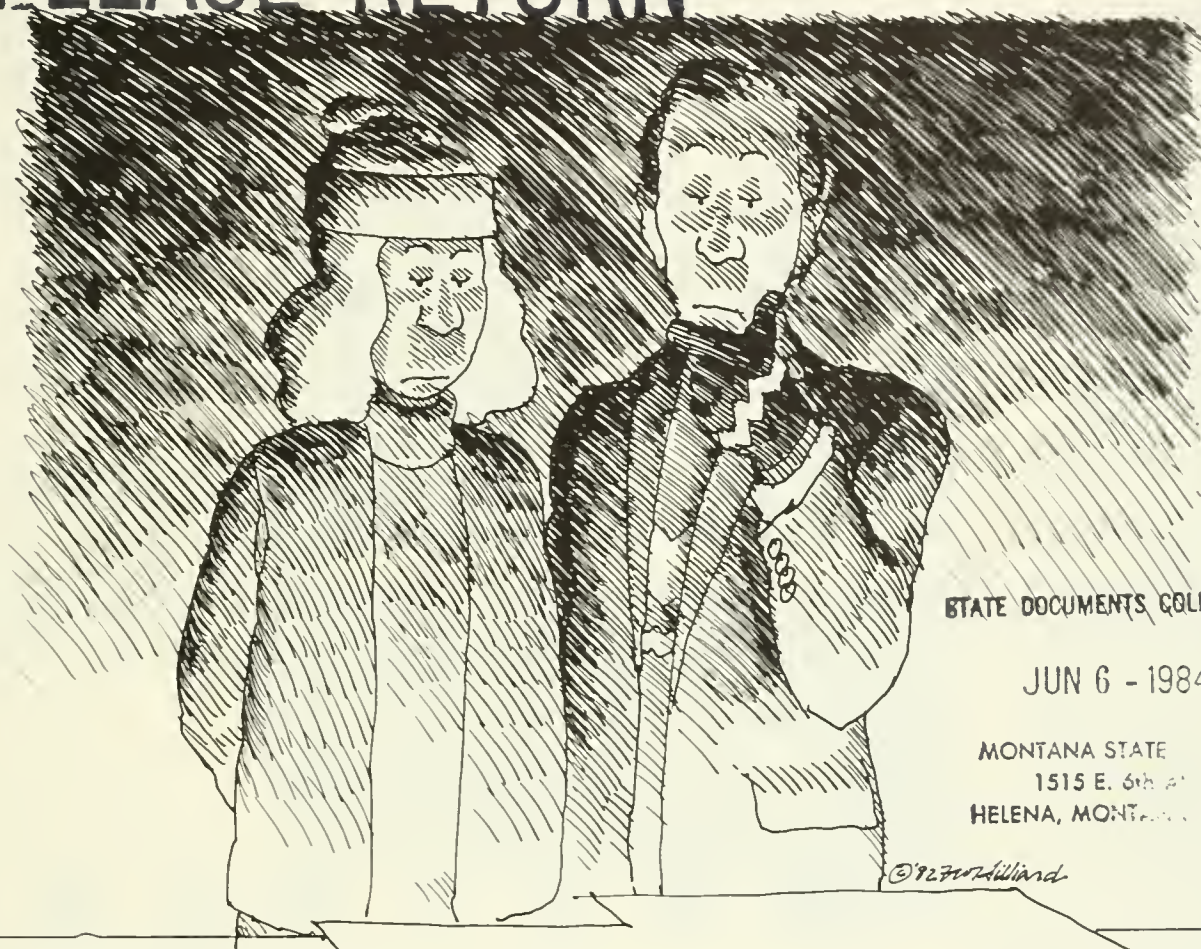
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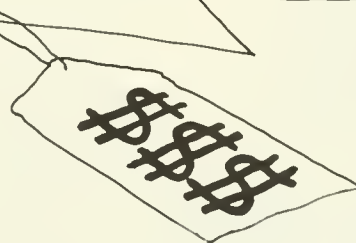
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THE GREAT ELECTRIC RATE SHOCK



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The Northwest Power Planning Council is required to develop a program to restore the Columbia's fisheries and a regional electric energy plan, to be carried out by the Bonneville Power Administration, emphasizing cost-effective conservation and renewable resources.

Cover illustration: Fred Hilliard

NOTICES

Update on Council activities

The Northwest Power Planning Council is considering conservation targets and resource targets in early December. The Council will be looking at alternative resource portfolios throughout December. (The resource portfolio is the combination of conservation and electric energy resources that the Council will include in the draft energy plan to be released February 1.) The Council plans to decide the components of the final resource portfolio before the end of the month. The meetings on December 7-8 and December 15-16 will focus on evaluation of the resource portfolio. The Council will decide at its December 15-16 meeting if they will need to hold meetings on December 22-23 and December 29-30 to consider the resource portfolio.

Issue paper distribution

The last two issues of *Northwest Energy News* included a form to be used to request issue papers and other Council documents. Because of the large volume of responses, the distribution of issue papers is proceeding more slowly than expected. Council staff will complete the distribution in the near future. If you requested issue papers but have not yet received them, please be patient.

Fish and wildlife program availability

The Northwest Power Planning Council's final fish and wildlife program is now being typeset and printed. Copies will be available in late December.

Advance word processor copies of the program are now available for review at the Council's central office and at each of the Council's state offices. See addresses on this page.

CALENDAR

December 1-2, Council meeting, 9:00 a.m., Western Forestry Center, Portland.

December 7-8, Council meeting, 9:00 a.m., Hilton Hotel, Pavilion Room, Portland.

December 10, Resources SSAC, 9:00 a.m., Council offices, Portland.

December 15-16, Council meeting, 9:00 a.m., Hilton Hotel, Ballroom B, Portland.

December 17, Fish and Wildlife SSAC (tentative), Council offices, Portland.

December 20, Forecasting SSAC, 9:00 a.m., Council offices, Portland.

December 22-23, Council meeting (tentative), 9:00 a.m., Federal Building, South Auditorium, Seattle.

December 29-30, Council meeting (tentative), 9:00 a.m., Hilton Hotel, Pavilion Room, Portland.

February 1, Draft energy plan available.

Late February - early March, Hearings on draft energy plan.

April 28, Final energy plan adopted.

For generations it has been a point of conflict — how to balance society's need for electricity with the natural needs of fish that once freely traveled the Columbia and Snake Rivers. But that all changed in November, as the Northwest Power Planning Council adopted its final Fish and Wildlife Program to restore the prized salmon and steelhead runs of the Columbia Basin.

"We have had a generation of fighting between the various interests," said Council Chairman Dan Evans of Washington. "This program represents the first opportunity in a generation to change conflicts to cooperation and to restore the fish runs which once were so plentiful."

The program calls for a number of changes in operation of the hydroelectric dams on the Columbia and Snake Rivers plus a series of physical improvements to help migrating salmon and steelhead get downstream to the ocean and back upstream and to encourage natural propagation. The program includes:

- **Water budget.** To speed up critical downstream travel time, the Council program calls for spring riverflows on the Columbia and Snake Rivers to be accelerated by greater release of reservoir water. This would reduce some winter power production ability while increasing power generation in the spring. The water could be used between April 15 and June 15 and would be controlled by treaty Indian tribes and various fishery agencies.

- **Bypass facilities.** To guide the young fish past the potentially deadly spinning power turbines of the dams, the Council wants to have facilities built at a number of projects to steer the fish around and out of the way of the power turbines. Prototype facilities would be developed by July 15, 1985, with the bypass measures completed by March 20, 1987, or a later date set by the Council.

- **Experimental trucking.** At

Turning conflict to cooperation

Council adopts program to restore Columbia's fish, wildlife



New day for fish: Council members (top picture, from left) Colbo, Evans, Hampson, and Mills will form a new Fish and Wildlife Committee to oversee implementation of the final program by the Council's fish and wildlife staff (bottom) and various federal and state agencies.

Priest Rapids Dam in Central Washington, the Council has authorized a three-phased study of short-haul trucking fish from above the dam to just below. The Council would have to approve the initial study approach before the dam's owner, Grant County Public Utility District, could go ahead. If interim results showed an insufficient number of fish were surviving the trucking, the Council would

seek to have the utility install a bypass facility at the dam.

- **Interim spills.** While the bypass facilities are being designed and tested, the Council wants the mid-Columbia PUDs to spill a certain amount of water to literally flush the fish over the dams and past the turbines.

Beyond efforts to safely guide the fish downstream, the Council also called for a number of measures to im-

prove survival chances for ocean-returning fish headed upstream to spawn. These include better ocean harvest management, improvement to existing fishways, adequate streamflows to help the fish, and a permanent solution to the chronic breakdown of pumps at various fish ladders.

In addition to aiding the fish in their down and upstream journeys, the Council's program also calls for various efforts to rebuild wild and natural spawning runs of the prized Northwest salmon and steelhead, augmenting those runs with possible additional fish hatcheries scattered throughout the region.

The program will also launch efforts to improve runs of inland trout and wildlife which have been damaged by the dams on the Columbia River System.

To protect fish from further damage, the Council wants to review all applications for new hydro projects to make sure they are consistent with the program.

The Council also established a Fish and Wildlife Committee of the Council members to oversee implementation of the program by various federal and state agencies and local utilities and to coordinate long-term research efforts. Named to the committee were Evans, Larry Mills of Idaho, Keith Colbo of Montana, and Al Hampson of Oregon.

The program goes into effect immediately, with some of the program measures happening as early as next year. The program will be funded through the rates of the Bonneville Power Administration and some local utilities. The Council staff estimates it will cost the average ratepayer about \$2 a month.

The program was required under the Northwest Power Act of 1980. Congress directed the Council to come up with a program to "protect, mitigate and enhance" the fish and wildlife of the Columbia Basin which had been harmed by

the hydroelectric dam development while also retaining an economical and reliable power supply.

"There will be a cost (to the program)," said Evans, former three-term Washington governor, "but it will be a modest cost. I would rather categorize it as an investment. For that investment we will be getting a very substantial restoration of an important economic resource which had deteriorated over the years and which we believe very strongly can be rehabilitated."

City Light proposes pilot conservation project

There are a lot of approaches to getting comprehensive conservation, but one of the continuing questions facing power planners and utility officials is simply, what works?

Seattle City Light thinks it might have one answer. The municipally-owned utility, the largest of its type in the region, has asked the Bonneville Power Administration to fund a pilot project using cash rebates and a private energy conservation firm to market electricity-saving measures to businesses, industries and residential consumers.

"This rebate approach provides some of the capital for the conservation investments, and signals to consumers the real value of conservation to the region," says Superintendent Joe Recchi.

Under City Light's proposal, the rebate would be given to a private firm marketing an array of energy-efficiency measures, with the bulk of the rebate being passed on to the consumer. The rebate would be based, in part, on the estimated energy savings from each building. Half of the potential rebate would be paid at the beginning, the rest paid over the next five years.

This way, says Recchi, "the firm has a strong economic in-

centive to ensure the long-term performance of the conservation improvements it markets. The firm has a stake in the building's energy performance even after it has made a sale."

Another advantage would be shifting the delivery of the service to the private sector — things like promotion, identifying improvements, installation, financing, quality control, says Recchi. "They can respond more quickly to the need for programmatic changes and to changes in personnel needs," the utility boss added.

Recchi said competitive bidding between firms seeking to market the rebate program could also spur development of new and improved conservation techniques.

City Light would like BPA to fund a three-year demonstration project with the cost to the federal agency of 18.9 mills for each kilowatt-hour saved in the winter and 10.6 mills for each kilowatt-hour saved in the summer. Recchi notes that this is "well below" the 35 mill near-term resource acquisition level BPA has set. City Light would pay 30 percent of the rebated money and provide program administration. The

utility estimates the total program would cost about \$8.5 million.

Recchi says the demonstration project could prove to be an important tool for utilities to nail down conservation.

"By offering the rebate to a private firm, a utility can acquire a substantial block of conservation resources through one source. If the rebate were expanded beyond the demonstration phase, a utility could become a wholesale purchaser of conservation from a number of conservation firms."

The proposal is being presented to BPA this month, and City Light hopes it could begin the demonstration project early next year.

Council takes aim at conservation targets

Conservation in existing and new residences, commercial buildings, agriculture and in-

dustry could "generate" power savings as much as 6,000 megawatts if the Northwest experienced record growth, according to a study by the staff of the Northwest Power Planning Council.

In 1980, the region used slightly more than 3,500 megawatts for space and water heat in existing residences. With simply improved efficiency, Tom Eckman, Council conservation analyst says, by the year 2000 the region "could accommodate at least one-third more residential consumers while using no more electricity than it did in 1980." Under the Council's high economic and demographic assumptions, more than 3.5 million new single-family, multi-family and mobile home units would be built by the year 2000. If built to the Council's proposed efficiency standard, these structures could free up as much as 1,550 megawatts. Naturally, in a lower growth pattern the savings would be proportionately less.

The wholesale levelized cost of the power would be about three cents per kilowatt-hour, Eckman says. The amount of power savings would increase as the cost of the conservation



Seattle savings: Under a City Light proposal, a private firm would be given rebates to market energy conservation to businesses, industry, and residential consumers.

program increased, he added.

In the commercial sector at three cents (or 30 mills), the savings could be as high as 1,000 megawatts. The industrial sector could add another 460 megawatts with perhaps as much as 325 megawatts coming from efficiency improvements in irrigated agriculture by the year 2000.

But achieving this level of energy savings is not without some constraints, cautions Eckman.

For many residential consumers, it's simply the problem of not having the money available to take conservation measures like insulating the house or installing storm windows. Further, what might be economic to the region as a conservation step might not seem that way to the individual consumer because traditional pricing policies mask the cost of new power resources.

In addition, Eckman says there is also the problem of having enough qualified people to design and install the various efficiency measures properly.

In the commercial and industrial sectors, present tax laws allow for deduction of energy costs, therefore blunting some of the actual impacts of power costs and potentially deterring conservation efforts,



Targeting conservation: Enormous savings are possible through increased energy efficiency, says Council staff.

the Council's analyst adds. Commercial businesses or industries must also weigh where to make their investments, and conservation may not be the most pressing investment requirement when money becomes available.

The potential 6,000 megawatt savings in the high load growth case may represent a conservative assessment because it does not include savings from more efficient household appliances, heat pumps and passive solar heating, says Eckman.

The Council is exploring a number of possible avenues for reaching high penetration

rates for the energy efficiency measures. Eckman said the Council is targeting a 90 percent penetration rate to be achieved over the next 15 years.

He also noted that the staff estimates on conservation aren't comparable to other estimates used in the region.

"The numbers reflect three important differences," says Eckman. "First, the high-case numbers are based on record economic growth in the region. Second, the levels reflect all conservation, whether caused by a program or rising prices. And finally, we're going after much higher pene-

tration rates than anyone in the region has ever done before."

Under the Northwest Power Act of 1980, the Council is required to come up with a long-range energy demand forecast and a plan to meet projected demand, placing top priority on development of cost-effective conservation steps.

Council weighs potential resources

New hydropower could add 1500 megawatts to the region's electricity production at a cost of 50 mills or less, according to studies done by the Northwest Power Planning Council staff and by regional resource experts. But other renewable resources, such as solar-electric, wind, and geothermal, need more research and development before they are ready to produce electricity at a competitive cost. The studies also assessed the technical potential for industrial cogeneration, biomass, coal, nuclear, natural gas, and fuel oil.

Geothermal energy has vast



Resource potential: New hydro and coal could generate more cost-effective conservation than the region needs, while solar photovoltaics are still too costly, according to Council staff studies.

potential, according to Tom Foley, the Council's manager of conservation and resources. Studies show that the resource is large, the technology is mature but site dependent, and the Council and the region could take a number of actions to assure cost-effective development when necessary.

Solar electric generation may eventually be important in the region, but current costs are too high, said Foley. Research and development may be able to bring the cost down to a competitive level. The use of passive and active solar systems for space and water heating are being analyzed as conservation measures.

While the potential for wind power is sizable — more than 2200 megawatts by the year 2000 — more work needs to be done to realize the potential, according to the studies. Problems include reliability of wind turbines, storage of generated electricity and lack of data about wind speed and duration at various locations. Staff recommended regional support for data collection and distribution, and development of large wind machine demonstration projects.

The cogeneration potential depends mostly on the state of industry in the region and the price paid for cogenerated electricity, said Foley. Since industry will not install cogeneration if the market is insecure, staff recommended establishing a regional price that is high enough to encourage industries to install cogeneration when they replace existing boilers.

Coal could provide as much energy as the region needs, according to the report, but siting, financing, and transportation are problems that need to be solved before other coal plants could be brought on line.

The studies concluded that nuclear power faces major problems in terms of public acceptance, uncertainties of costs and lead times, and regulatory constraints.

Staff estimates and recommendations are the result of an extensive process that included research by Battelle Northwest, comments by a number of regional experts on

the potential and problems of the different resources, and task groups organized by the Resources Subcommittee of the Council's Scientific and Statistical Advisory Committee to review each resource in depth.

Ferguson, WPPSS chief, resigns

Robert L. Ferguson, managing director of the troubled Washington Public Power Supply System, resigned November 29, saying he would leave the post next June because of health reasons. Ferguson had undergone complicated heart surgery earlier this year.

Ferguson's departure injects a new uncertainty into the already stormy conditions surrounding the Supply System. In January, WPPSS must make the first payments on money borrowed for terminated Plants 4 and 5. Those plants were cancelled last year and a third project, Plant 1, was placed in mothballs as the consortium wrestled to complete the two remaining nuclear plants.

Ferguson, 50, came to WPPSS two years ago after being director of nuclear programs for the federal Department of Energy. He arrived at the public agency during perhaps its most troubled period to date, as WPPSS par-



Ferguson to depart: WPPSS head to leave post next June has won respect for bringing order to a tough situation.

ticipants were trying to put the multi-billion dollar projects back on the track after years of cost overruns and slack management.

Ferguson made sweeping changes in the Supply System's management, resolved on-going labor disputes, and got work restarted on Plant 2, the project farthest along, after the Nuclear Regulatory Commission had stopped it because of safety problems.

Caught in the tide of changing energy demands, Ferguson finally recommended that the Supply System terminate its last two projects after estimates pegged the cost of completing all five reactors at nearly \$24 billion.

Ferguson's tenure at WPPSS has won praise from oft-times divergent parties. Nick Cain, outgoing chairman of the WPPSS executive board, told the *Seattle Times* that Ferguson

had "done a good job" and successfully tackled the task of righting the Supply System.

Steve Zemke, a leader in Don't Bankrupt Washington, a group which spearheaded Initiative 394 as a means to control WPPSS spending, also praised Ferguson.

"We have a certain respect for him," Zemke told the newspaper. "He is one of the few able to make hard decisions when others want to duck."

Now, with Ferguson set to leave June 1, the Supply System must struggle with its next crisis — whether participants in the two cancelled projects will pay for the billions borrowed for those ill-fated projects.

Comments focus on model standards

A staff proposal for a model energy-efficiency code drew widespread public comment at the November 16 meeting of the Northwest Power Planning Council. The proposal sets performance standards for new residential building levels ranging from 2.0 to 3.2 kilowatt-hours per square foot for space heating. The levels vary according to type of

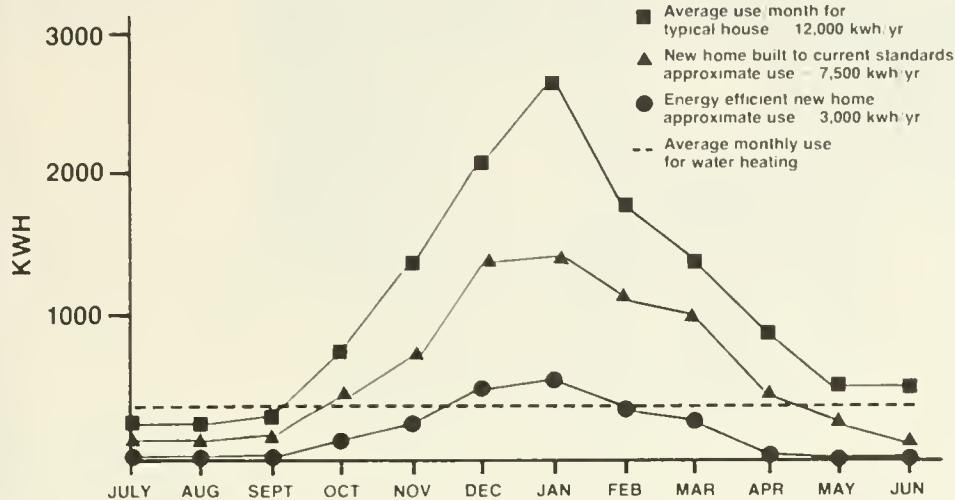
Revised model standards

Annual space heating use, in kwh per square foot

Building Type	Climate Zone		
	1	2	3
	(West of the Cascades)	(E. Wash./E. Ore. & Idaho)	(W. Mont.)
Single Family	2.0	2.6	3.2
Multifamily (5-plex or larger)	1.2	2.3	2.8

Average monthly space heating use

Seattle/Portland



building and climate zone.

The proposal also calls for regional financing through BPA of cost-effective conservation in existing buildings, reimbursement of agencies for enforcement costs, and regional financing of efficiency steps in new homes for the first three to five years.

Although reactions to the proposal were generally favorable, specific elements were criticized. Some people questioned the proposal to finance builders for the cost of the new efficiency steps before the new codes are adopted. The Pacific Northwest Homebuilders Association said that if a new, more energy-efficient building code was in fact cost-effective for the consumer, neither builders nor home buyers would need financing to be persuaded of its merits: "The building industry (does not) expect to be bought for the purposes of sweetening the somewhat sour pill of more stringent codes."

A small incentive may be appropriate, said the Northwest Public Power Association, to encourage builders to learn new building techniques necessary for the stricter codes. However, NWPPA was also opposed to full financing.

According to a computer model developed by Council

staff in response to comments, it is very much in the region's interest to provide incentives to builders prior to the adoption of new codes because the region would save much more in energy than it would spend for the incentives. In addition, said Tom Eckman, the Council's conservation analyst, more builders will gain experience in new construction techniques, and the Council will learn more about the cost and performance of the standard if an incentive is paid.

Although some concern was expressed, especially by BPA, that the proposed model standards would not prove to be cost-effective, there was also much support for the stricter standards. According to M. J. Macdonald of Seattle City Light, "codes should be set at least at average cost levels, and (we) might prefer a higher level."

Council staff reevaluated the proposed standards following comments and concluded that using higher cost estimates did not change the levels of the proposed standards. One exception was Montana, where higher cost estimates provided by homebuilders made one measure uneconomic and resulted in raising the standard from 2.4 to 3.2 kwh per square foot for space heat.

BPA raised concerns about

the Council's heat loss methodology. After discussions with BPA staff and comparison of BPA's and the Council's computer models for heat loss, Council staff concluded that their figures were accurate.

The different heat loss methodologies produced the same total result, although they differed on individual measures. The Council's heat loss methodology is consistent with those of the Department of Energy, Lawrence Berkeley Laboratory, and Owens Corning Company.

BPA also questioned the standards in terms of their impact on indoor air quality. As a result of discussions with BPA staff, Council staff decided to recommend installing air-to-air heat exchangers for mechanical ventilation in all three of the region's climate zones. Performance standards were revised upward to ensure adequate ventilation.

The proposal to reimburse code enforcement agencies for the costs of enforcing the new codes was applauded. In addition, according to the City of Eugene, BPA should provide technical support to cities to assist them in implementing the new codes. The City of Tacoma argued for incentives to cities to encourage them to adopt standards stricter than the Council staff proposal.

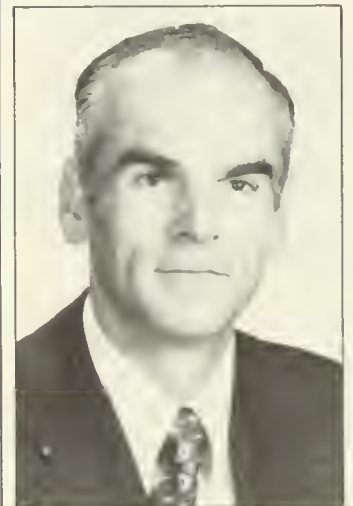
Ex-BPA boss Hodel named energy secretary

Don Hodel, a former Bonneville Power Administration chief, has been placed in the nation's top energy post in the Reagan Administration. Last month, the President nominated the 47-year-old Oregonian as Secretary of Energy to replace the outgoing James Edwards.

The appointment of Hodel, administrator from 1972 to 1977, stirred up some smoldering embers in the environmental community, which characterized his appointment as "the second James Watt" of the Reagan Cabinet. Many Northwest environmentalists remember Hodel for a 1975 Portland City Club speech, in which he blasted some environmentalists as "prophets of shortage."

In response to the nomination, utility officials and veteran BPA staffers described Hodel as a decisive and capable administrator who will bring a unique understanding of the region's present energy problems.

Many of today's troubles were just on the drawing boards when Hodel was BPA boss. Hodel was Administrator as BPA and the region's



DOE head named: Hodel's appointment has drawn mixed reactions.

utilities began to put together Phase II of the Hydro-Thermal Power Plan — the document that served as the foundation for construction of the costly Washington Public Power Supply Systems nuclear projects and other coal and nuclear facilities in the Northwest.

It was Hodel who issued the 1976 Notice of Insufficiency—telling BPA's preference and industrial customers they couldn't be assured of all their power after 1983—which is now being contested in local courts.

Hodel's tenure was also marked by some important milestones for BPA, such as the completion of the Northwest-Southwest Pacific Intertie transmission lines and the construction of the third power house at Grand Coulee Dam.

Hodel left BPA in 1977 to practice law and serve as an energy consultant. Last year, he was appointed as top deputy to Interior Secretary James Watt.

The Northwesterner comes to the Department of Energy just as the Administration is attempting to dismantle it. His predecessor, Edwards, a former South Carolina governor and oral surgeon, had vowed to oversee his department's demise—to no avail. A DOE spokeswoman, Gail Bradshaw, says Hodel will continue Edwards' goal, although it's questionable whether Congress will go along.

In an interesting sidelight, Hodel has named a top BPA official, Earl Gjeldre, as his executive assistant during the transition period. Hodel and Gjeldre worked together when both were at Bonneville.

Hodel must be confirmed by the Senate, where his nomination is expected to be approved later this month.

Ratepayer candidates win PUD seats

The ratepayers movement shifted from the soapbox to the ballot box last month as Washington voters turned over nearly a dozen incumbent public utility commission positions.

The election results have already shook up the board of the Washington Public Power Supply System and marked the first widespread turnover of utility commission seats in recent times.

The losers included Nick Cain, chairman of the WPPSS executive board, who lost his Okanogan County PUD race to Jim Martin, and Dan Leahy, a Chelan County ratepayer

candidate who narrowly trailed his opponent, Jim Wall, for a position on the Chelan County PUD.

And there were a number of other major changes in PUD boards around Washington State. In Snohomish County, Matt Dillion, a leader in the group Fair Use of Snohomish Energy (FUSE), defeated a utility employee, Dick Wright. Dillion will be taking a seat vacated by Stan Olson, a WPPSS executive board member who decided to retire from the PUD board. There were several other counties where incumbents either chose not to run or were defeated in the primary. In Grays Harbor County, Jack Welch, a former WPPSS board member, opted not to run. In Clallam County, incumbent Art Fletcher was defeated in the primary.

The *Seattle Times* reported that of the 24 commissioners

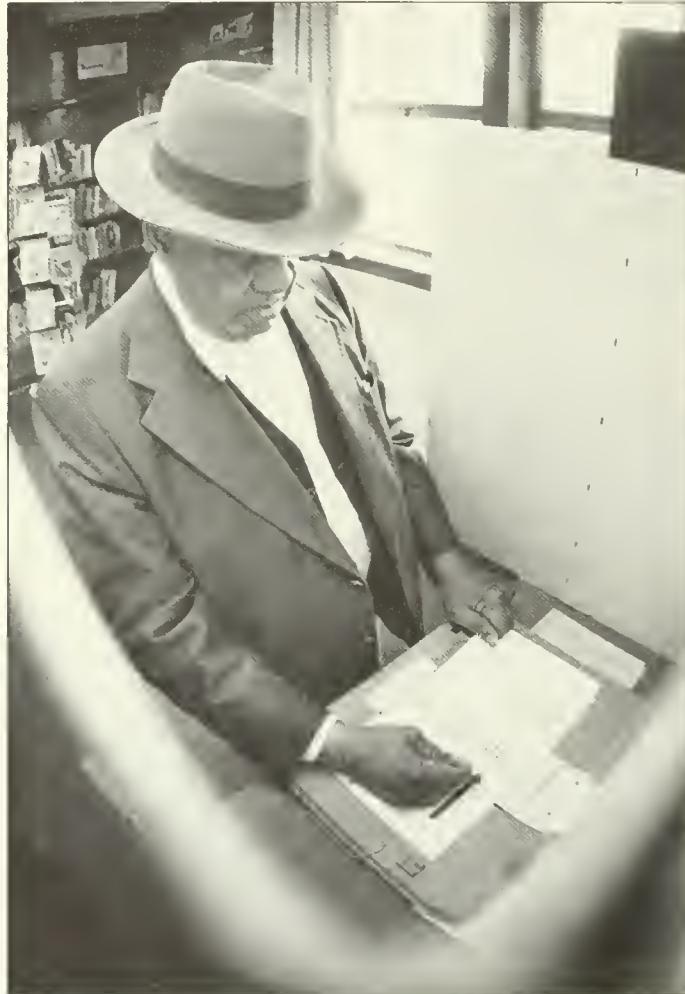
who would have been up for re-election, 11 decided not to run. In other counties, recall efforts are underway as the backlash from the troubled multi-billion dollar WPPSS projects spreads across the state.

Symposium on NW Power Act planned

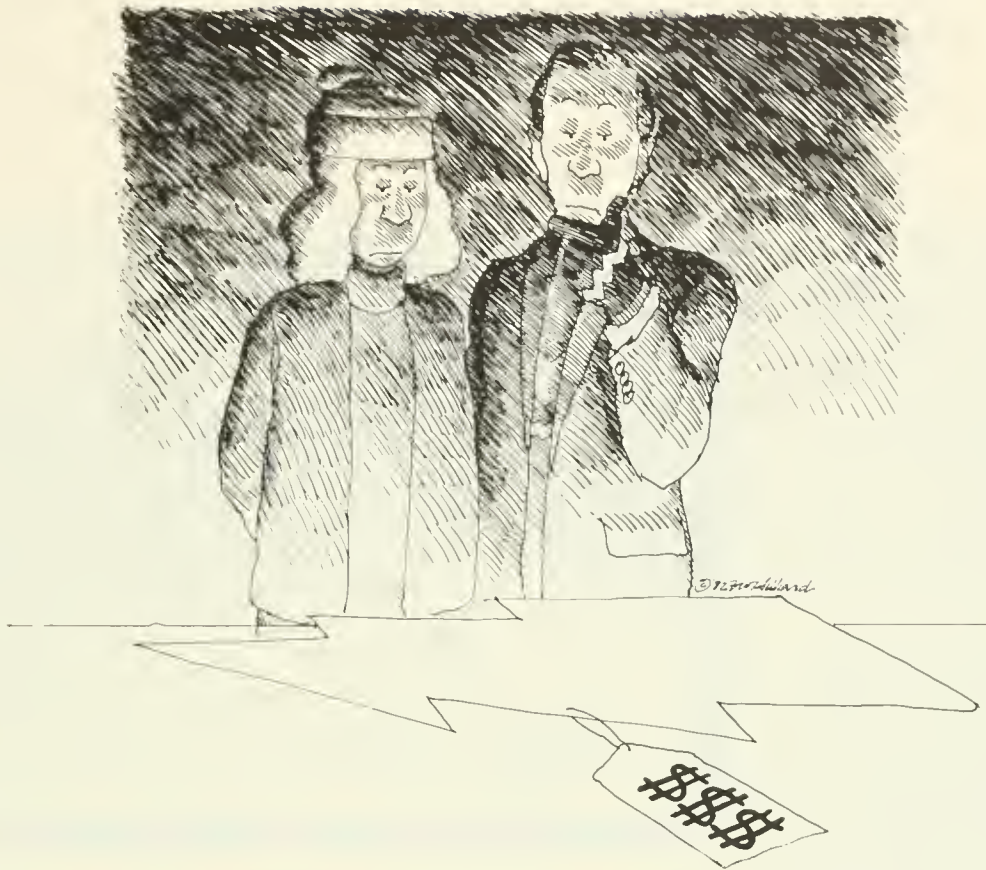
Planning in the public interest will be the focus of a two-day symposium reviewing the development of the Northwest Power Act and the political, economic, technical and legal implications of policies being devised to implement it. The symposium is scheduled for Friday and Saturday, February 4 and 5, on the Lewis and Clark College campus in Portland.

Sponsored by the L&C Law School's law review *Environmental Law*, the symposium will include presentations by Roy Hemmingway, Oregon member of the Northwest Power Planning Council, members of the Council staff and others closely associated with the history of the Act. Bonneville Power Administrator Peter Johnson will be keynote speaker at 1:30 p.m. on Friday, February 4.

The Law School announced that approval is being sought from bar associations for continuing legal education credits for attorneys attending the symposium. Their registration fee is \$100. The sessions also are designed for engineers, representatives of ratepayer groups and the general public. That registration fee is \$50. Scholarships and group rates are also available. For further information, write *Environmental Law*, 10015 S.W. Terwilliger Blvd., Portland, OR, 97219, or call (503) 244-1181, ext. 700.



Casting the ballot: The recent elections in Washington state brought a widespread turnover in PUD seats.



THE GREAT ELECTRIC RATE SHOCK

*BPA's rates are reaching record levels,
and ratepayers are, at best, perplexed about their utility bills.
Here's a look at what's happening.
And a glimpse at what might.*

A year ago it was a drama played out in town gymnasiums and on television screens. Electric rates were shooting up. Two of the multi-billion dollar Washington Public Power Supply System nuclear plants were cancelled. And

ratepayers, many sporting red-and-white buttons declaring "I'm Irate," hurled angry questions at local utility officials. What was happening with their power bills? they demanded.

(Turn to page 10)

It was a ratepayer revolt. Colliding with economic hard times, the public outcry about rates has created a charged environment as attempts are made to put the region's energy house back in order. It's the makings for what one utility official dubs "The Great Rate Debate."

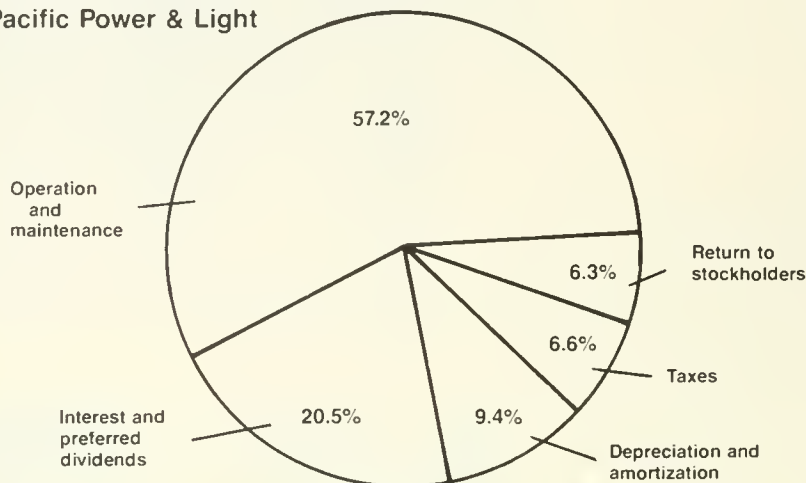
Yet the debate over rates is a relatively recent development in Northwest energy history. For nearly 40 years, the electric power scene was one of tranquility filled with good news. Power was cheap. Rates held steady or, in some cases, even went down. The axiom of the time was "live better electrically."

Today, many of the region's ratepayers wonder if that is such a self-evident truth. The Bonneville Power Administration just raised its wholesale rates 50 to 60 percent. And more big hikes are on the way. Consumers are asking why rates are going up — even when they conserve — where rates are going, and what they can do about them?

The present rate debate comes as the region is trying to implement the Northwest Power Act, passed just two years ago to establish a new order for planning, generating, marketing and pricing electricity sold by BPA. But much of what ratepayers see in today's electric bills reflects the transition from one era to another. And the clamor sets the stage for the next era under the long-range plan of the new Northwest Power Planning Council.

Revenue requirements

Pacific Power & Light



To understand what has happened to electric rates — and what will happen in the near-term — it's important to understand what goes into setting utility rates. For while there is scant information on the billing stub beyond the amount due, the bill is a composite of many things that go into the rate equation.

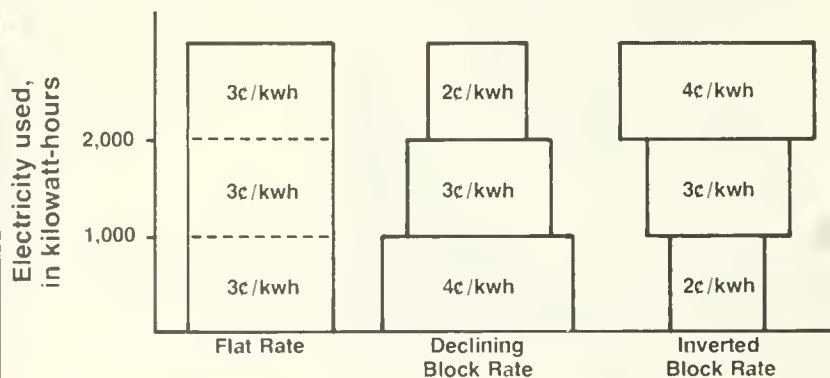
Basically, rates are set to recover the "revenue requirements" of a utility: what it costs to get the electricity from the point where it's generated to your home or bus-

iness. These requirements differ from utility to utility. For example, one utility might generate all its own power and cover a broad service territory. Another might purchase power wholesale, such as from BPA, and service a compact, densely populated urban area. Nevertheless, there are some fairly standard revenue needs:

1. cash expenses for daily operations;
2. repayment on principal and interest on money borrowed for power facilities.
3. fuel costs (except for conservation and renewable resources)
4. taxes, payments in lieu of taxes to local jurisdictions from public utilities and dividend payments to stockholders for private utilities.

Using these cost figures, utilities go through a complex process to set consumers' actual electric rates. In the Northwest, there are three rate-setting methods. At the wholesale level, the Bonneville Power Administration sets its own rates through an elaborate administrative procedure. BPA's rates are subject to final approval by the Federal Energy Regulatory Commission. For public utilities, state laws allow them to set their own local rates. For example, the Seattle City Council sets rates for Seattle City Light. For private, or investor-owned, utilities, rates are established by state utility commissions. Idaho

Electricity Pricing Methods



*Today's electric bills reflect
the transition from one era to another.*



Cheap: Bonneville Dam was the first federal power project built on the Columbia and has produced years of cheap power.

Power Company, for example, must file any rate change with the Idaho Public Utilities Commission for final approval.

To recover the needed revenues, utilities and regulators break costs into two categories: "rate spread" between various customer classes (typically residential, commercial and industrial) and "rate structure" or "design" within the particular classes.

In the first case, the "rate spread" of the overall costs for each class may vary greatly because of the nature of the utility's service territory. Portland General Electric's territory is fairly compact, containing a mix of residential, commercial and industrial loads. Neighboring Pacific Power, on the other hand, is spread out over six Western states, running the gamut of potential customers. The proportions of utility costs for each customer class will be different for each utility.

With "rate design," the utility or regulatory commission is setting a pricing policy for each customer class. Generally, rate design will follow one of three patterns:

- Declining block — under this method, for each additional unit of electricity used (measured in kilowatt-hours), the price per additional unit or block gets smaller.
- Flat rate — you pay the same for each

kilowatt-hour no matter how many used.

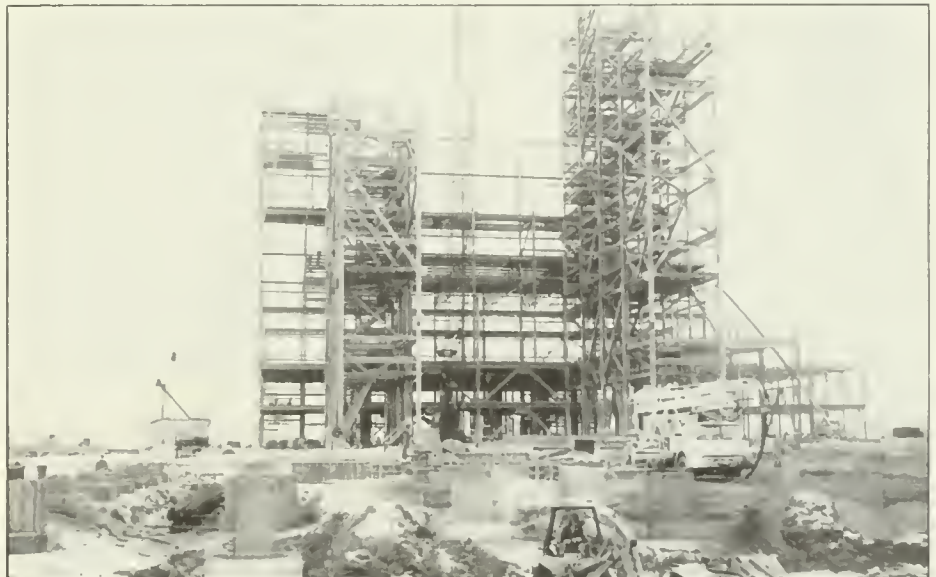
- Inverted block — in this case, each added unit or block of electricity gets more expensive.

The pricing policy a utility picks reflects,

in part, its revenue requirements and marketing goal. A utility with large revenue requirements and sufficient generating resources may want to encourage sales — and, therefore, consumption — and lean toward a declining block or flat rate. A utility facing high costs for new generating resources may favor an inverted rate, which might reduce consumption but also reduce future costs.

These matters — revenue requirements, rate spread and rate design — were once the sole domain of a handful of rate specialists and attorneys within the utility fraternity. Understandably. From 1937 to 1965, BPA's wholesale rate was a flat 2.78 mills, or less than a third of a cent per kilowatt-hour. Between 1965 and 1975, it increased to 3.5 mills, or about 20 percent.

This extended period of rate stability and dirt cheap power marked the Northwest's hydroelectric era. For as the Federal Columbia River Power System was built — starting with Bonneville and Grand Coulee Dams and stretching up and down the Columbia and Snake Rivers — the cost of electricity actually went down in relationship to inflation. With nature providing the fuel, the cost of the dams was basically the original steel and concrete that



Not-so-cheap: Portland General Electric's Boardman coal plant was part of the region's thermal power period. But Boardman wasn't so cheap. This one coal plant cost \$525 million to complete.

How rates are set – federal, state & local

There are three basic rate setting processes that determine the price of retail and wholesale electricity in the Northwest: local, state and federal. The first two affect the retail prices paid by residential, commercial and industrial users. The third affects the wholesale prices paid by the utility and directly served industrial customers of the Bonneville Power Administration.

Local rate setting process

The first step is a recognition by a municipally owned utility or county public utility district that it needs to increase or adjust its revenues. Most often, this means a rate increase. This is the result of an internal procedure.

In the second step, the utility or PUD develops a rate increase proposal. This process includes allocating costs over customer classes, designing the rate spread. And it includes designing the rates within customer classes, such as deciding how various groups of commercial customers will be charged for power within the commercial rate class.

Citizen rate advisory committees are frequently involved in developing the proposal.

A third step is actually filing the formal rate increase proposal with the governing body, the City Council or PUD Commission.

Fourth, the Council or Commission will undertake a rate review process that includes public hearings.

Fifth, the governing body will decide to accept, change, or reject the increase.

This process, while highly technical, includes public meetings and must follow state laws governing locally operated public utilities.

State rate setting process

State public utility commissions regulate the rates of private or investor-owned utilities. These processes may include an informal exchange of information

before the formal process is initiated. Using the state of Oregon's process as a model, the process' major steps are as follows:

First, a private utility files for a rate increase.

Second, the public utility commissioner usually decides to suspend the request until both an investigation and a formal public hearing process are completed.

The commission staff then reviews the rate increase request to identify those issues on which it disagrees with the utility.

Fourth, a conference is held before the formal rate hearings begin. This conference gathers all the parties who will participate in the hearing proceedings (utility, staff, public interest groups), they exchange information, and written testimony is prepared.

Fifth, a hearing officer holds formal hearings, witnesses give testimony on the proposed rate increase, and a formal record of all the testimony is kept.

Sixth, the hearing officer prepares recommendations on the basis of the record and presents them to the public utility commissioner for decision.

Seventh, the commissioner reviews the record and hearing officer's recommendations and decides whether to gather more information, including holding further hearings, or to render a decision on the basis of the record presented.

At any time during this process, if the petitioning utility and the state commission staff reach agreement over issues, they can seek approval directly

from the commissioner, thereby short-cutting the procedure. In all, Oregon state law requires this procedure to be completed in no more than nine months.

Federal rate setting process

The Northwest Power Act, Section 7(i), sets forth the process by which BPA wholesale rates must be set.

Step one requires the BPA Administrator to file notice of intent to change rates in the Federal Register.

Second, BPA develops an initial proposal detailing what rates will be changed along with justification for those changes.

Third, formal hearings are held, under the direction of a hearing officer, to hear testimony from BPA, its customers, and other interested parties, and a formal record is prepared. At the same time, a second set of hearings is held around the Northwest region to gather citizen testimony.

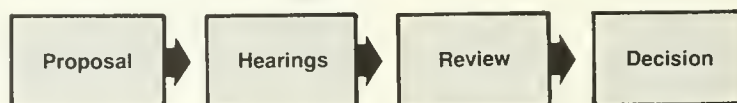
The fourth step occurs once the hearing process is concluded. The BPA Administrator reviews the record and develops a final rate change proposal.

Fifth, this final rate change proposal is filed with the Federal Energy Regulatory Commission.

Sixth, FERC reviews BPA's proposed rate change, looking for evidence that the proposed rates will recover the costs of generating and transmitting power.

FERC does not review the surplus sales rates BPA charges for power sold outside the region.

Rate setting process



(From page 11)

spanned the river. The potential supply of hydro power exceeded the demand. In turn, as more customers were added the construction costs of the project could be spread over more ratepayers, thus lowering the power cost.

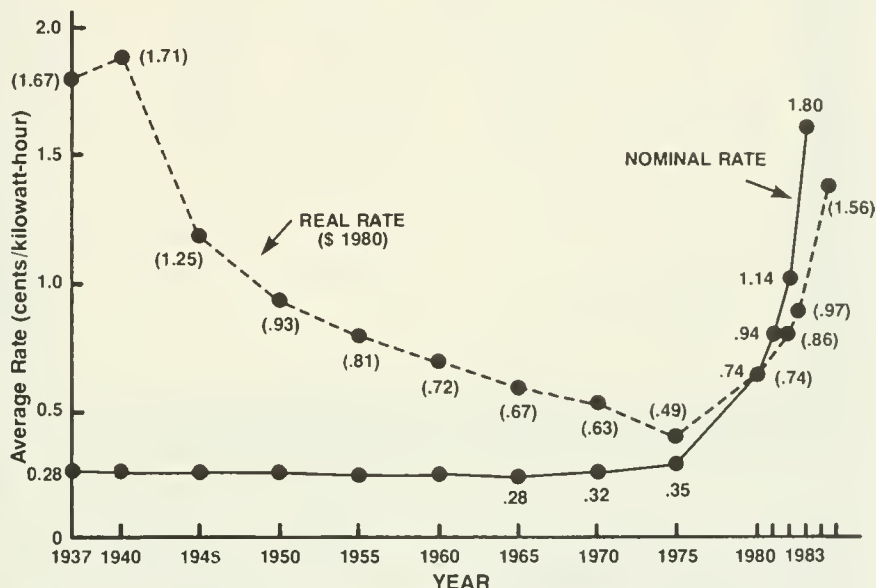
The dams were man-made marvels. The fuel was free, the potential power seemingly limitless. J. D. Ross, BPA's first boss, once described the Columbia River System as a "coal seam that would never thin." Started as part of the New Deal and built with low-cost federal government loans, the dams produced the cheapest electricity in the nation. For years the dams produced enough electricity for the region's numerous public utilities and rural electric cooperatives and the electric-intensive aluminum industry, with the remaining power to private utilities. The region seemed awash in cheap hydro power.

Yet even the mighty Columbia's dams had their limits. In the late 1960s, as most of the large hydro sites were developed and the number of customers grew, utility planners turned to the next era of power generation. It would be a thermal era. Coal. Nuclear. The transition to modern thermal power plants was one that the rest of the nation — not so blessed with a Columbia — had already made. For the Northwest it was encapsulized in the first phase of the Hydro-Thermal Power Plan.



Limitless power: J.D. Ross, BPA's first chief, considered the dams a nearly limitless source of electricity.

BPA power rates, 1937-1983



Wholesale rates for priority firm power. Priority firm serves public utilities and small farm and residential customers of private utilities.

"Real" dollars have been adjusted for inflation. All figures based on 1980 dollars. "Nominal" dollars have not been adjusted for inflation.

The tenet of the time was that the growth in electrical demand would shoot steadily upward, a given so reliable that it could be plotted with reasonable accuracy using a ruler and graph paper. The Hydro-Thermal plan envisioned initially 20 nuclear and two coal plants by the 1990s. They would carry the year round base electrical loads, with the dams — which could be quickly turned on or off like giant spigots — used to meet power demand peaks and seasonal loads. With the hydro system suited physically to meeting sudden power peaks and thermal plants most economically efficient when run full time, planners said the Hydro-Thermal plan was the logical post-hydro era step.

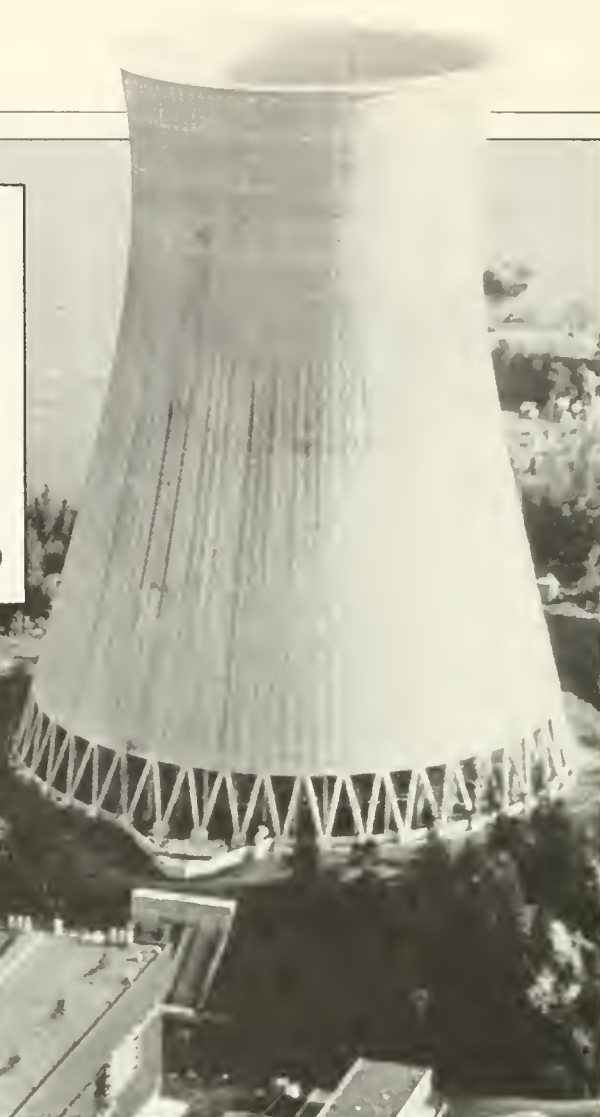
But the step came with a cost. Thermal plants, particularly nuclear reactors, were complicated to design, expensive to build and injected a new cost component into the rate equation, the cost of coal or uranium. The 1970s posed other complications, too. Double-digit inflation pumped up the price tag on new power

plants. Increasing power demand and plant construction delays threatened to throw supplies out of balance. By 1973, BPA stopped all but seasonal surplus sales to the region's private utilities. Cut off from cheap hydro power, the private utilities turned to their own thermal plants: Trojan Nuclear Plant in Oregon, and coal plants in Oregon, Washington and Montana. The new power plants rolled through the rate process, sending private utility electric bills dramatically upward. From 1970 to 1981, PGE's residential rates increased more than 200 percent, to 3.04 cents per kilowatt-hour from 1.09 cents. The rate hikes created a growing disparity between the retail rates of private utilities and public utilities.

Public utilities were not immune to the "thermal rate shock," however. As their part of the Hydro-Thermal Power Plan, the Washington Public Power Supply System embarked on building five giant nuclear plants. Under an elaborate financing mechanism called "net-billing," BPA

Comparative power plant costs

Project	Date Completed	Capacity	Cost (nominal \$)
Grand Coulee Dam	1941	4063 MW	\$ 63 million
Centralia Coal Plant	1972	1200 MW	\$310 million
Trojan Nuclear Plant	1976	1080 MW	\$503 million
WPPSS Nuclear Plant 2	1984 (est.)	1100 MW	\$ 3 billion (est.)



Nuclear first: PGE's Trojan plant was the first commercial nuclear reactor built in the Northwest.

agreed to financially underwrite the first two plants and 70 percent of the third. In turn, BPA would meet this revenue requirement — paying off municipal bonds used to finance the projects — by raising its rates. The arrangement allowed WPPSS to borrow billions to build the projects, using the rate-setting ability of the federal power marketer as a form of collateral. But in 1975 the Treasury Department nixed further use of the net-billing agreements for any other power projects. A year later, 1976, then BPA Administrator Don Hodel (now Secretary of Energy designate) issued "notices of insufficiency" to the agency's remaining public and industrial wholesale customers. They were legal warnings that BPA

could not assure its customers of meeting all their power needs after 1983.

The notices, combined with the increasing rate disparity and fear of a crippling legal scrap over allocation of the cheap hydro power, sent public and private utilities, large power users and BPA back to Congress for a solution. Four years later the Northwest Power Act emerged — and the next era of power generation for the region.

"The Act is about economics," says Charles Collins, a Washington member of the Northwest Power Planning Council. "Pure and simple economics. It reflects today's economic realities."

And a large part of that reality is the rapid recent increase in BPA's wholesale rates. In 1979, BPA hiked its rates 88 percent to 7.4 mills for public agency customers. In 1981, 50 percent to 11 mills. And this year, 60 percent to 18.1 mills. Furthermore, BPA anticipates that its rates will go up another 35 percent between now and 1986 before they might plateau. That would take rates from their 1975 level of 3.5 mills to a 1986 level of 24.5 mills — a 700 percent increase in just over a decade.

Behind that record BPA rate hike is primarily the financial impact of the three net-billed WPPSS plants. And a few more numbers illustrate the striking financial difference between old cheap hydro and new — expensive — thermal power.

The Northwest Power Act laid down a new framework for dealing with the question of electricity costs.

Grand Coulee Dam cost initially \$63 million in Depression Era dollars. The three WPPSS projects will cost more than \$10 billion — excluding the \$2.25 billion borrowed for the two projects terminated earlier this year. The net-billed WPPSS plants (the first of which is scheduled on line in early 1984) are in the BPA revenue requirement pipeline. And the flow of the pipeline can't be reversed.

So rates are continuing up, planners are looking at the next era of power development, and consumers are wondering what's happening to their electric rates in the near-term and what they can do about them in the long-term.

Today, with people reeling from record rate hikes throughout the Northwest, the

"Great Rate Debate" increasingly is focusing on a very fundamental economic question: How much is it going to cost?

The Northwest Power Act laid down a new framework for dealing with that question and directed the Northwest Power Planning Council to come up with a cost-effective plan for the region's electric energy future. In drafting its plan, the Council is to follow three criteria. First, is the power needed? Second, is it the most cost-effective resource? And third, does it follow the law's resource priorities of conservation, then renewable resources, then high fuel efficiency or cogeneration and finally conventional thermal power? The questions don't produce easy answers.

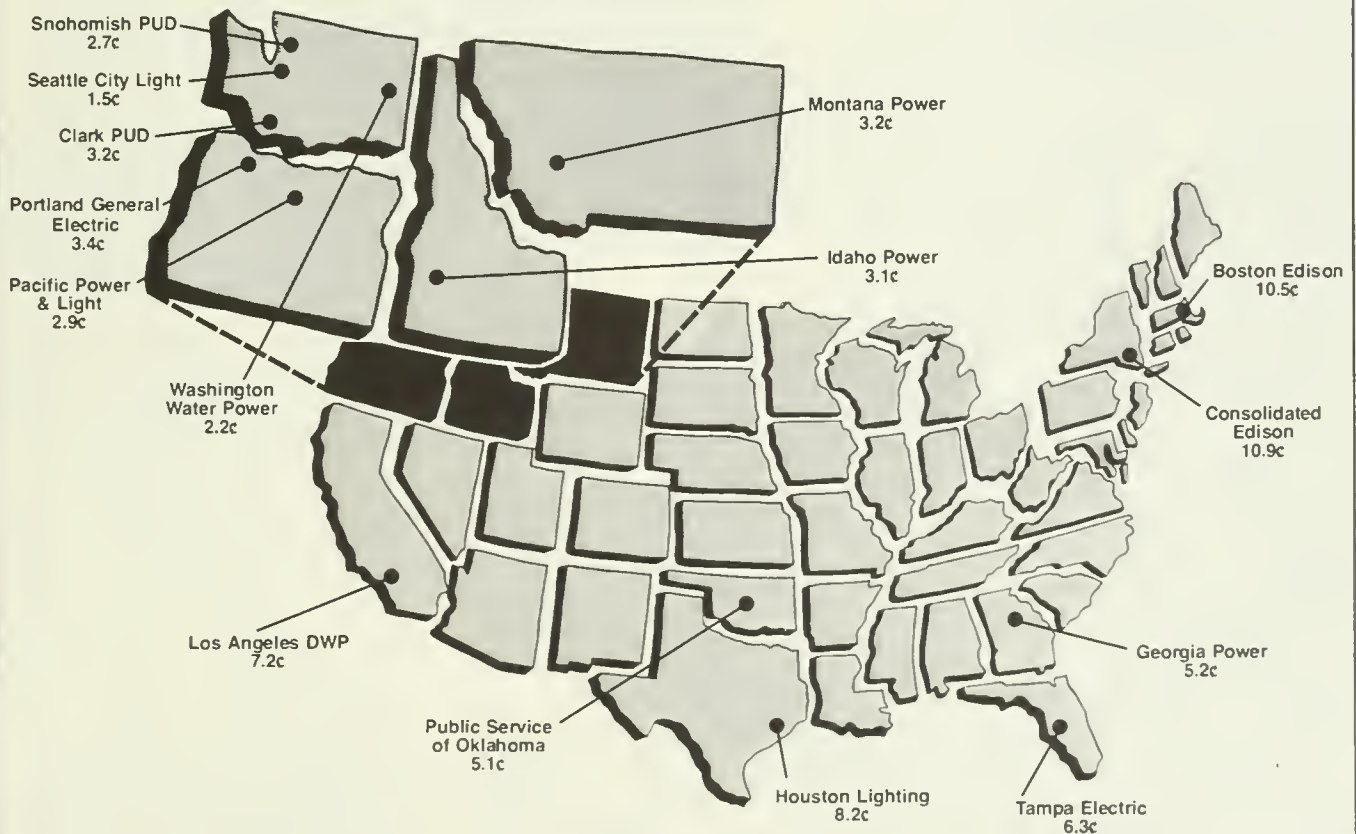
One of the central concerns is what to

do about conservation, especially given projected power surpluses, current power costs and conservation's impact on rates. More than one ratepayer has wondered at a public meeting or in a letter to the local newspaper about why rates go up even when they conserve electricity.

The seeming Catch-22 stems from the unique rate impacts of conservation programs. By promoting greater efficiency, conservation efforts can allow you to perform the same task, from heating your house to smelting an aluminum ingot, with less electricity. But lower overall consumption doesn't necessarily lower a utility's present revenue requirements. The original power plants still must be paid for. In the short term, reduced consump-

United States residential electricity rates

Cents per kwh, 1000 kwh usage, May, 1982



Big bills, slow sales mean BPA cash squeeze

Over the last six months, energy planners have breathed a collective sigh of relief as projections of a power surplus have replaced those of dire deficits. High stream runoffs, rising rates and increased conservation have combined to provide excess power in the region. BPA now estimates that the region will have from 500 to 1,000 average megawatts of firm energy surplus from October, 1983 to October, 1987.

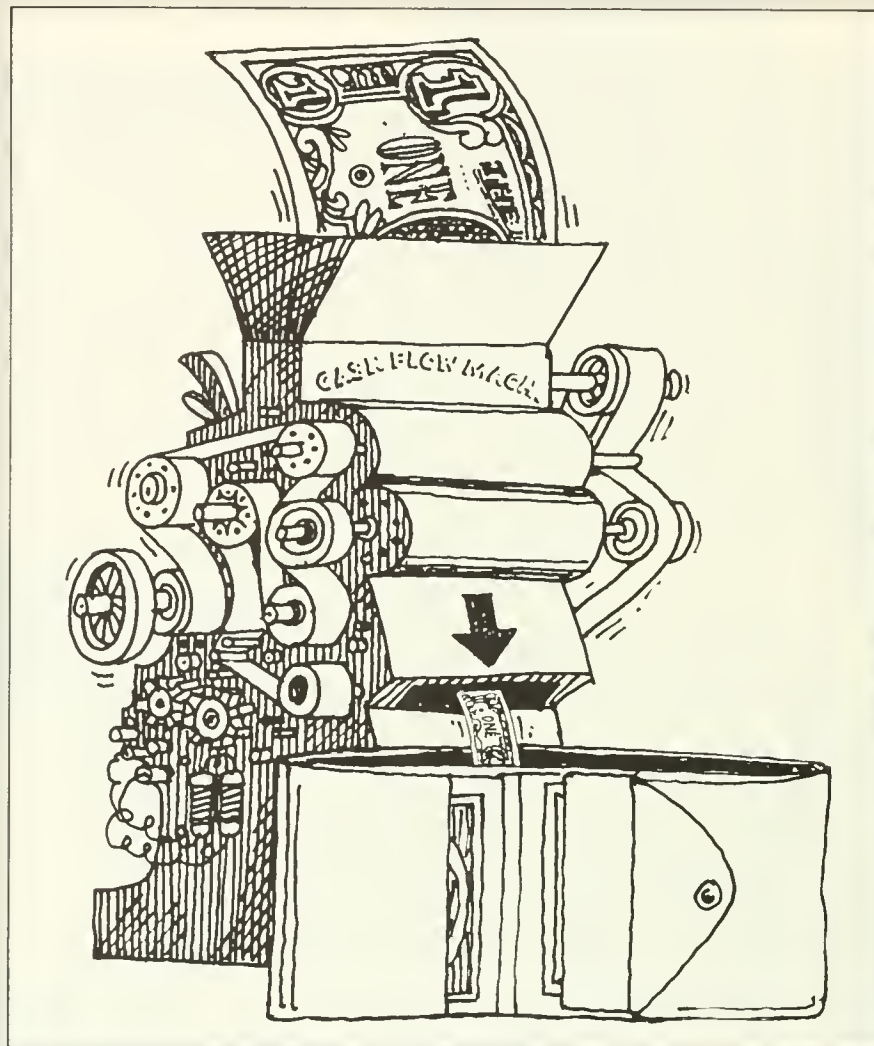
At the same time, the sluggish economy has hit the Northwest with full force. Industries have been forced to cut back production and curtail some operations, dropping the electricity demands on BPA.

This places the federal marketing agency in a sticky quandary — there's plenty of power to sell, but few ready markets outside of the Southwest. California utilities buy the surplus power for as little as half a cent per kilowatt-hour to offset their oil-fired generators which cost as much as 9 cents per kilowatt-hour.

These conditions have affected BPA's revenues from power sales both inside the region and to the Southwest. In October, Bonneville revenues fell \$18 million short of the projected \$155 million, prompting the agency to rethink its planned expenditures for the new fiscal year, including some \$225 million budgeted in the last rate case for Treasury payments on the federal hydroelectric system.

Deferring the Treasury payments in 1983 could cause BPA rates to rise sharply in 1984. Bonneville Administrator Peter Johnson, however, hasn't made a decision to defer the payments which would divert the agency from its current course of repaying the deferrals by 1985, according to Shirley Melton, acting director of BPA's Division of Rates. If the FY83 revenue shortfall continues, BPA may have to reconsider its policy, according to Melton. But she warns that it's too early to predict what revenue collections may be in the coming year.

BPA revenue reduction was triggered by the drop in power bought by big Bonneville customers. In October, BPA's direct service industrial customers purchased about 270 megawatts less than the 2,212 megawatts projected. The agency had hoped to sell about 1,000 megawatts



of firm power surplus outside the region, but sold only 200. Instead, the agency sold about 1,200 megawatts of non-firm power, which brings a lower price than firm power sales.

October's drop in loads is just another barometer of the load reductions due to economic conditions and stepped up conservation efforts — reductions which initially began in 1982. Early BPA estimates show that in FY82, loads from aluminum industrial customers were down about 19 percent from FY81.

This industrial load reduction coincides with an increase in sales of non-firm power to California. In FY81, BPA received around \$71 million from the non-firm sales outside the Northwest, according to Ann Priestley of BPA's Division of Customer Service. Around

\$135 million from non-firm sales was received in FY82, Priestley said.

To compensate for revenue losses, many are now urging Bonneville and the Northwest Power Planning Council to explore ways to "firm up" sales of non-firm surplus to California by establishing long-term contracts for the sale of the power. Others are urging that BPA garner a higher price for the surplus power by marketing it within the region, possibly to irrigators in the spring.

A "major effort" is underway at BPA to offset any revenue shortfalls by selling the available firm surplus power as non-firm power, according to Melton. If BPA can't, the agency will be "hard-pressed not to have shortfalls by the end of the year," she said.

BPA worries about generating surplus power that can't be sold for the cost of production.

(From page 15)

tion means the same revenue requirements must be spread over fewer kilowatt-hours sold. In addition, there is the second cost of the conservation program itself for even energy efficiency isn't free. In the long term, however, lower demand may mean that a utility will not have to invest in new, more expensive power.

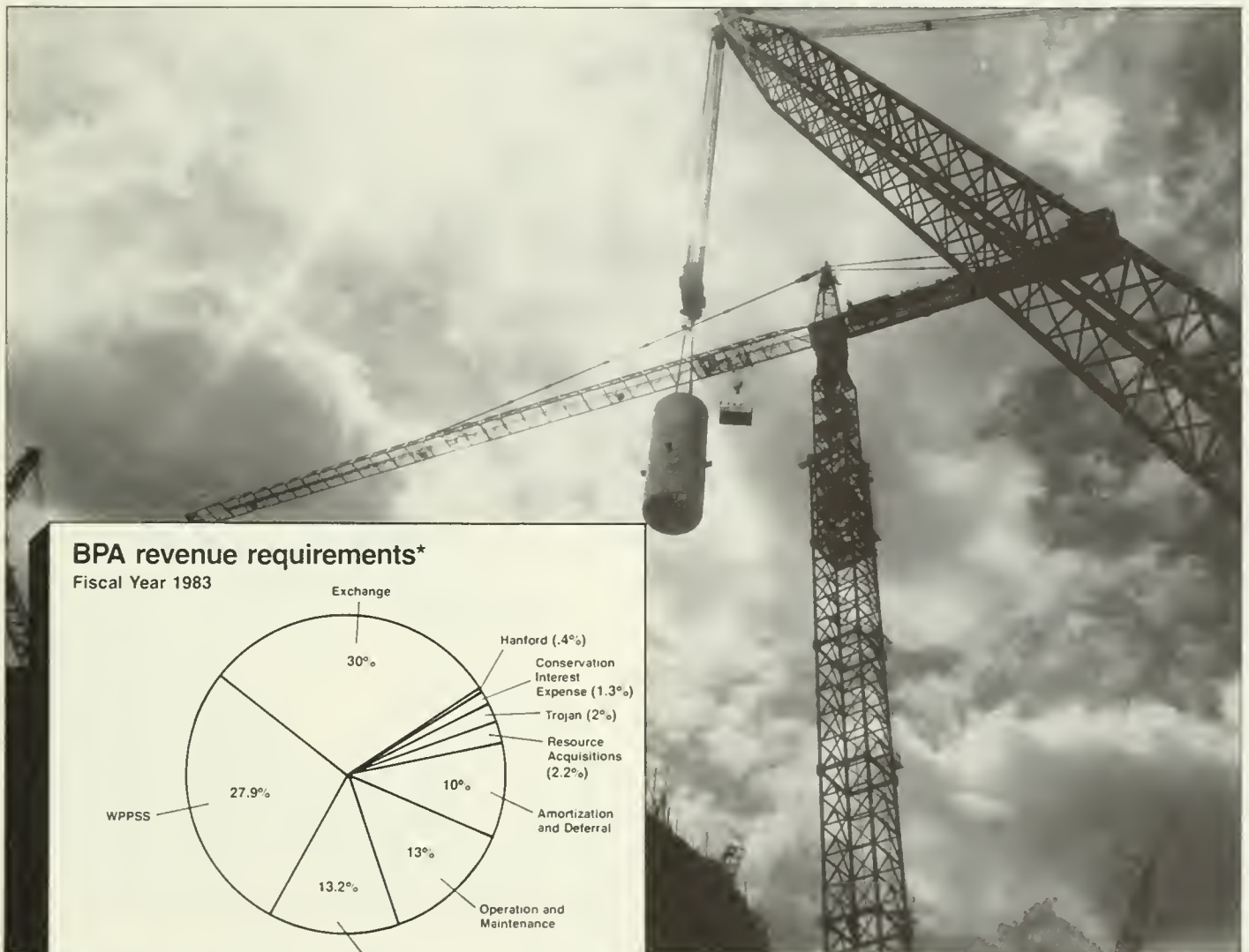
So demand goes down as more people conserve. A consumer who uses fewer kilowatt-hours may pay a lower total electric bill even if the rate per kilowatt-hour

increases. As rates go up, more consumers find it to their economic advantage to take the efficiency steps. So demand goes down again.

The spectre of this downward spiral effect especially concerns BPA. With the bulk of the WPPSS costs rolling through their rates, BPA has a high cash demand but its revenues are coming in lower than anticipated. The twin costs of conservation only complicates matters, says Dennis Metcalf, a BPA rate specialist. BPA worries, say officials, about having expen-

sive nuclear plants come on line generating surplus power, thanks to conservation, that can't be sold for the cost of production. And this situation is only compounded for public utilities involved with the cancelled WPPSS 4 and 5 projects. To some of these utilities, it's a question of whether they will be toppled first by a ratepayers' rebellion or the multi-billion dollar WPPSS debt.

(Turn to page 19)



Hoisting WPPSS costs: As the chart shows, a big part of BPA's cash requirements are for its backing of the first three WPPSS projects, such as Plant 1.

Puget Power tries to avert 'negative' credit

A recent request by Puget Sound Power and Light to amend its residential/farm agreement with the Bonneville Power Administration highlights one of the ironies of changing electric rates.

Section 5(c) of the Northwest Power Act allows private utilities to buy a share of low-cost power from federal dams at the same rate as public utilities. The idea behind the provision was to spread the benefits of the federal power system, including the cheap hydropower, to all homeowners, renters and small farms.

The provision works this way: If a private utility offers to sell power to BPA at its average system cost, BPA must buy it. BPA then sells an equal amount of power at its preference customer rate (for public utilities) back to the private utility for resale to its residential and small farm customers.

This works to the consumers' benefit as long as the private utilities' average system cost remains above the BPA preference rate. If the BPA preference rate rises above private utility's average system cost, the utility may ask to

have the agreement set aside until such time as the exchange will again benefit its residential and small farm customers.

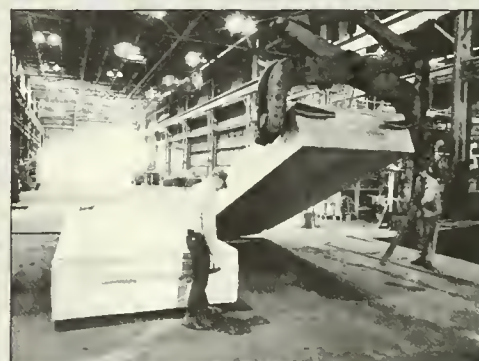
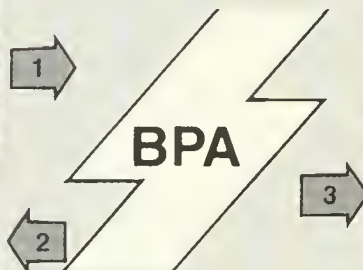
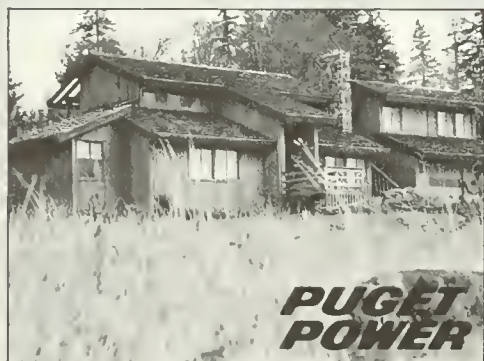
To prevent BPA from losing money in the residential/small farm exchange, crafters of the Act provided that rates charged by BPA to its large direct service industrial customers (mostly aluminum companies) would be raised to cover the exchange sales costs. In the bargain, the DSIs won the right to long-term power sales agreements with BPA, thereby assuring them of a steady, stable supply of power.

Puget Power and BPA signed an exchange sales agreement. But when BPA rates were raised October 1 — thanks largely to the cost of the first three WPPSS plants — they became higher than Puget's average system cost. To avoid being in a "negative benefit" situation, explained Puget Vice President Ron Bailey, the utility asked the Washington State Transportation and Utilities Commission for permission to "zero." This allowed the utility to ask BPA to put the exchange sales agreement on hold until such time as

Puget's average system cost may rise above the BPA preference rate.

The exchange contract anticipates this eventuality, Bailey said, and it also provides for an accounting mechanism to continue working so that if a utility like Puget later wishes to resume the exchange sales arrangement, the net cost to BPA will be zero. A utility can pay cash to reach a zero benefits balance, Bailey said, thereby opening the way to resume the residential/farm sales exchange.

"Yes, I think this provision of the Act is working well," Bailey observed. He said some utilities' average system costs will remain well above the BPA preference rate. So these utilities will continue their residential/farm exchange arrangements without interruption. But, Bailey said, because Puget Power's average system costs is relatively close to the BPA rate, it may from time to time shift into or out of the exchange depending upon which will most benefit its residential and small farm customers.



- 1) Private utility sells power to BPA at its average system cost.
- 2) BPA sells power back to private utility at preference rate.

- 3) The net difference is charged to direct service industrial customers.

*One way to avoid future rate shocks
could be through a fundamentally
different kind of planning.*

(From page 17)

Then what can be done to avoid future rate shocks?
Collins says while rates will continue up there are several tools in the Northwest Power Act to avoid future shocks.

"Fundamentally, we have to plan differently," says the Council member. "We need to develop a system of risk management. Sure, we're going to make mistakes. But we should do all we can to keep those mistakes in the millions, not the billions."

A key to avoiding billion dollar mistakes is developing more flexible resources, says Collins, ones which can be developed in increments as demand actually appears over the horizon. And in that mix, Collins adds, rates and conservation play an important part.

"We need to get people to operate in their own economic self-interest," he asserts. "We're not talking so much about energy efficiency as we're talking about economic efficiency. Take the price of gasoline. What was economically efficient at 30¢-a-gallon isn't economically efficient at \$1.30-a-gallon."

But one of the region's problems, say some economists, is that today's price of electricity doesn't accurately reflect the cost of generating new power.

"We need to have consumption decisions based upon the cost of electricity," says John Gibson, a Seattle energy econ-



Two tasks: Washington's Charles Collins says the Council has two major planning tasks — get the power needed, and get the cheapest forms of power available.

omist. But Gibson says most ratepayers lack good information on future power costs and how they might be deferred through efficiency improvements. And even with information, Gibson notes, many consumers simply don't have the

money to make conservation investments in their homes or businesses.

The tools of the Northwest Power Act can knock down those barriers, Collins says. The Council has several means of improving the power system's efficiency and slowing the upward rate spiral, he points out. First, it can pursue a series of incentives, such as full financing of improved efficiency measures in new buildings which would be cheaper than building a new power plant years later. Another vehicle is through model retail rates to send consumers a more precise cost signal about the price of new power. And finally, mandatory regulations, such as mandating weatherization of a home at the time of sale.

But Collins says the decision to push ahead on conservation still needs to be weighed on the economic scales.

"The law tells us to do two things," says the Washington Council member. "It says get the power you need, and get it the cheapest way you can."

"If we succeed at that, we'll have gone a long way towards dealing with future rate problems."

Effect of conservation on electricity bill



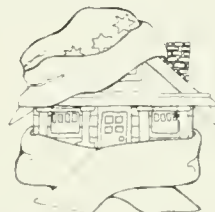
Before

January use: 3800 kwh
Monthly bill: \$136



50% rate increase

January use: 2800 kwh
Monthly bill: \$203



After conservation improvements

Capital cost: \$900
January use: 2800 kwh
Monthly bill: \$146

Figures for monthly bill derived from Seattle City Light's winter rates.

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